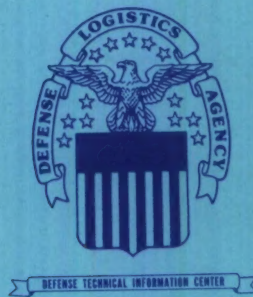


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AD-A086 300

# *Military Special Libraries in 1990*

## *Proceedings of the 23rd Military Librarians Workshop 3-5 October 1979*



JUNE 1980

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The theme of the 23rd Annual Military Librarians Workshop--held in Alexandria, VA and sponsored by the Defense Technical Information Center (formerly Defense Documentation Center)--was Military Special Libraries in 1990. More than 150 military librarians participated in six individual task groups, consisting of a number of general sessions, highlighted by well-known speakers in the information industry. The respective discussion topics assigned to these groups were Contracting Out Library Services, Closing the Card Catalog, New Products and Services, Managing Libraries, Steady-State (No Growth) Libraries, and Basic		



20. Planning for Library Automation. The workshop general sessions, consisting of lecture presentations followed by questions and informal discussions, were interspersed in the program with task group meetings. Each task group had a full schedule of speakers on its specific topic to assist group members to define and propose solutions to future problems likely to confront military special librarians in the 1990s. Emphasis was placed on the impact of new technology on the changing role of the Library, its relationship to future user needs, and library management in the probable work situation in the 1990s. The ability of librarians and, more importantly, of users to cope with the changes foreseen was a major interest. The workshop concluded with task group summaries presented by the group leaders.





Paul M. Klinefelter, Chairman of the Military Librarians Division and host of the Workshop, sounds the Alexandria town crier's bell to call together the attendees.





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2 Jun 80

PREFACE

Twenty-three Military Librarians Workshops have been held since 1957 when the first one was convened at the Air University in Alabama. Since then these workshops have become increasingly successful and well attended. Their place as an important podium for new developments in librarianship and as seminars for planning how to meet new requirements and problems is well established. These workshops represent a significant contribution from the Military Librarians Division of the Special Libraries Association, which sponsors them. Their usefulness goes far beyond membership in the Division, per se, in that attendees come from military special libraries throughout the U.S. Defense Establishment regardless of SLA membership. The proceedings of these workshops are deposited at the Defense Technical Information Center (Defense Documentation Center until 14 Oct 80) and copies are available from there.

This 23rd Workshop was organized to alternate general sessions and individual task groups in six significant subject areas. Each attendee was assigned to one of these task groups, and each task group presented a full program of speakers and reactive discussion sessions.

The six task groups were set up within the overall theme of "Military Special Libraries in 1990." Task Group 1 presented functional guidelines for contracting out library services. Task Group 2 discussed closing card catalogs, alternatives to this step, various cost factors, as well as the future potential of the on-line information retrieval system as a replacement. Task Group 3 explored the wide range of new technology video services, telecommunications, networking and resource sharing. Task Group 4's main concern was the efficient management of libraries in the future. Task Group 5 discussed the technique of maintaining zero growth as a solution to storage and staffing problems likely to plague libraries in the 1990s. Task Group 6 tackled the impact of automation and how to obtain maximum benefit from it.

One unusual feature of this 23rd Workshop was to dedicate the traditional banquet meeting to retired librarians who had been hosts or were deeply involved in previous workshops over the years. Many of those invited responded and 17 from all over the country were able to attend.

A handwritten signature in dark ink, reading "Hubert E. Sauter", is positioned above the printed name.

HUBERT E. SAUTER  
Administrator



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23rd  
MILITARY LIBRARIANS  
WORKSHOP



MILITARY SPECIAL LIBRARIES IN 1990

3-5 OCTOBER 1979

DEFENSE  
DOCUMENTATION  
CENTER

CAMERON STATION

ALEXANDRIA, VA.



23rd MILITARY LIBRARIANS WORKSHOP  
3-5 October 1979

SPONSOR

DEFENSE DOCUMENTATION CENTER

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23rd ANNUAL MILITARY LIBRARIANS WORKSHOP  
3-5 OCTOBER 1979

Program

Tuesday, October 2

1800-2100 Registration Desk (5th floor foyer) -  
Old Town Holiday Inn

Wednesday, October 3

0800-0900 Registration (5th floor/Holiday Inn)

0900-0930 Opening of Workshop (Carlyle Room)  
Mr. Hubert E. Sauter, Administrator,  
DDC

Welcoming Address

Lt Gen Gerald J. Post

Director, Defense Logistics Agency

0930-1030 General Session (Carlyle Room) -  
Dr. Carl Hammer  
Director of Computer Sciences,  
Sperry-UNIVAC

1030-1050 Coffee Break (5th floor foyer)

1050-1200 Task Groups (Session 1)

Task Group 1 - Contracting Out Library  
Services in the 1990's  
Capt. Piercy

Task Group 2 - Closing the Card Catalog  
in the 1990's  
Snowden 1

Task Group 3 - New Products and Services  
in the 1990's  
Brent 1

Task Group 4 - Managing Libraries in the  
1990's  
Snowden 3 & 4

Task Group 5 - Steady State (No Growth)  
Libraries in the 1990's  
Snowden 2

Task Group 6 - Basic Planning for  
Library Automation in  
the 1990's  
Brent 2

- 1200-1330 Luncheon (Carlyle Room)  
                     Speaker: Dr. Margaret Park  
                                     University of Georgia
- 1330-1500 Task Groups (Session 2) (Task Groups  
                     3 and 6 will be combined for this  
                     session only.)
- 1515 Buses to Washington, D.C. (hotel  
                     King Street entrance)
- 1600 Visit National Air & Space Museum
- 1700 Visit Air & Space Museum Library  
                     Reception & buffet
- 1915 Buses to Holiday Inn/Alexandria

Thursday, October 4

- 0800-0900 General Session (Carlyle Room) -  
                     Mr. Mel Day, Director, National  
                     Technical Information Services
- 0900-0920 Coffee Break (5th floor foyer)
- 0920-1130 Task Groups (Session 3)
- 1130-1200 Cash Bar (5th floor foyer)
- 1200-1330 Luncheon (Carlyle Room)  
                     Speaker: Ms. Madeline Henderson  
                                     Manager, ADP Information Analysis  
                                     Group, Institute for Computer  
                                     Science & Technology,  
                                     National Bureau of Standards
- 1330-1515 Task Groups (Session 4)
- 1515-1530 Coffee Break (5th floor foyer)
- 1530-1630 General Session (Carlyle Room)  
                     Speaker: Mr. Richard W. Boss  
                                     Information Systems  
                                     Consultants, Inc.
- 1900-2000 Reception (Snowden Room)
- 2000 Banquet (Carlyle Room)  
                     Attending the evening program will  
                     be a number of retired military  
                     librarians who have been  
                     particularly active in previous  
                     workshops.



Friday, October 5

0800-0930 General Session (Carlyle Room)

Speakers: Mr. Lee Powers,  
Federal Library Committee  
Mr. Herman Miles,  
Deputy Administrator, DDC

Business meeting presided by

Mr. Paul Klinefelter, Chairman,  
Military Librarians Division, SLA

0930-0950 Coffee Break (5th floor foyer)

0950-1200 General Session (Carlyle Room)

Task Group Reports

1200 Workshop Adjournment

1330-1500 Visits to the Army Library, Pentagon  
and to DDC, Cameron Station

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Mr. Hubert E. Sauter  
Administrator, Defense Documentation Center

## OPENING OF WORKSHOP

Hubert E. Sauter  
Administrator, Defense Documentation Center

As your host, for this the 23rd Military Librarians Workshop, it is a pleasure for me to declare your conference open for business. I know that Paul Klinefelter and many others have worked hard preparing for this workshop, and on your behalf I would like to thank all of them.

Your theme and program are challenging and from my own experience as a public, university and industrial librarian, I know that the problems ahead will require your dedication and best efforts. I am sure that the results of this workshop will be considerable, and we in the Defense Logistics Agency and the Defense Documentation Center are pleased to be working with you toward finding solutions to many of these problems.

Next, I would like to move on to the second pleasant task I have this morning, and that is to introduce to you the Director of the Defense Logistics Agency. He has taken time from his very busy schedule and pressing problems to welcome you, and I believe that it shows his concern for and real interest that he has in the DoD technical information programs.

Ladies and gentlemen, it is my pleasure to introduce to you  
Lt. Gen. Gerald Post, USAF, Director of the Defense Logistics Agency.





Lieutenant General Gerald J. Post, USAF  
Director, Defense Logistics Agency



## DEFENSE LOGISTICS AGENCY

HEADQUARTERS  
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### WELCOMING ADDRESS

Lieutenant General Gerald J. Post, USAF  
Director, Defense Logistics Agency

I am first and foremost very pleased to welcome you to Virginia, to Alexandria's Old Town, and particularly to this annual workshop which brings together military librarians and technical information specialists from all over the Defense Department here and abroad, and from installations in the Canadian military establishment as well. I understand that there have been 22 annual workshops previous to this one and that these conferences have come to represent a very important meeting place for the exchange of ideas, professional expertise and technical information in this extremely important area of library and information science. World War II had many far-reaching effects and one of them was to take librarians on military installations and elevate them to be necessary partners in many new areas of the Defense Department. Information has come to be valued for its usefulness in all application areas. Librarians these days are rarely just archivists or readers' helpers, or classification specialists. They are depended on to understand, interpret and disseminate information of a highly technical nature. Librarians have earned an honored place in DoD plans and accomplishments through their diligence, resourcefulness and organizational ability in the dissemination of information.

It is appropriate that this year's workshop should be hosted by the Defense Documentation Center, given its place as the central depository and resource for research and development information in the Department of Defense. My distinct impression is that DDC is able to accomplish its large scale services and functions because dedicated librarians like you man local libraries and information services throughout DoD and see to it that the most effective use is made of the services and information DDC can provide. DDC is the only one of my field commands which operates exclusively in the R&D information sector, but the crossovers and relationships between your organizations and the Defense Logistics Agency are extensive and varied. The entire procurement and materiel support process carried out for the respective Armed Services by the Defense Logistics Agency has its beginning in developmental efforts whose work you document and support. As an Air Force officer my own career has been affected in many ways by the services you provide. I see that you have a close relationship with the respective Service schools. I imagine that the preparation of research papers in these institutions--which I remember as a slow and tedious process indeed--has been vastly improved by the effective help in terms of background information which many of you provide.



I am pleased that this meeting falls within the full intent of some Defense Logistics Agency goals. One of these is "In partnership with Military Services, achieve and maintain the highest possible state of combined forces materiel readiness." This is the top priority DLA goal. Another very important goal of ours is to "Maintain an atmosphere that encourages challenge, creativeness and open lines of communication in our operation." Not only is this meeting in accordance with these DLA goals, it also embraces the President's instructions in his recent message to the Congress of the United States which transmitted a science and technology policy for the future. In that message he stated that our national security depends in large measure on our technological capability. Specifically, maintaining technology leadership in weapons systems, utilizing technology to reduce costs, building our defense research base, preventing export that erodes our technological superiority, and utilizing advanced technology capability for arms control. We--the Defense Logistics Agency, I personally, each of you and the organizations you represent--have important roles in assisting the President to achieve these goals.

I want to express my appreciation for the time you have taken from your busy schedules to work at solutions to common problems and intensive planning for more effective library information services for the future. The theme "Military Special Libraries in the 1990's" is a demanding one and offers wide scope for effective discussion of the information networks and systems which the Defense Department requires to maintain its efficiency. I wish you a very productive workshop.

Thank you.

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October 3, General Session:  
Dr. Carl Hammer  
Director of Computer Sciences,  
Sperry-UNIVAC



## BRINGING ELECTRONICS TO OUR LIBRARIES

Carl Hammer, Ph. D.  
Director, Computer Sciences  
Sperry-UNIVAC  
Washington, D.C.

Morning General Session - 3 October 1979

It is my great pleasure to acknowledge that I am pleased to be at this meeting of the Military Librarians. First, I want to thank Paul Klinefelter for his invitation to keynote your conference, giving me an opportunity to meet with so many dedicated professionals. I am also grateful to my good friend Herman Miles who has graciously volunteered to provide a suitable background for my remarks by showing you a sequence of relevant viewgraphs.

Paul Klinefelter's gracious introduction suggests that we start with some questions: What will librarians do during the next twenty years, besides suffering from inflation? What tools will you employ, and what will be the marks of your trade? We might go one step further and ask what our world will then look like, since it is a world into which we must fit for better or worse.

Let me begin by examining the past. Society has undergone considerable change since its labor and capital intensive years. It has become a society which relies first and foremost on the power of data and information. We leave behind enormous trails of data, as individuals, associations, corporations, governments, or even libraries. This data trail is colossal; its magnitude in the U. S. amounts to about one million bits of data per person per year! I can personally account for an aggregate of 65 million bits of data, the equivalent of five thousand double-spaced pages, all about me, in government files; industrial, educational or medical records; legal or judicial proceedings and the like. Numerous investigators both here and abroad can stick their fingers into "my data" without my even being aware of their activity. I don't really like that, nor do most other "victims of this data conspiracy." But whether we like it or not, a million bits of data per person, per year, are stored in our unforgiving, computerized data banks. Thus our society has become information-rich, a prime example of post industrial developments. By the end of this century, it has been estimated that over 90% of our work force will serve the data and information industry with hardly anyone left to do physical labor, work with machines or till the soil.

This transition to a mind-amplifying society has been in the making for decades. We started with being a muscle-amplifying society in which we developed and patented more machines than anybody. We were successful in our support of invention and innovation to a point where we occupied a leading position in technology. But machines

past were all dedicated to amplifying our muscles. While the roots of this nation were in agriculture - a fact almost forgotten - we changed from being a labor-intensive, agricultural society, by becoming a capital and machine-intensive society. Finally, in the post-industrial world of today data and information have become our greatest wealth.

Two interesting developments are worth noting. First, in making this transition, we altered not only our societal structure but we also created a new kind of wealth. In the past, the riches of corporations or individuals were measured in terms of real assets. They were (often blatantly) visible; they could be physically touched or moved about; or they could be stored in Fort Knox. Today's society has created a significant amount of wealth in terms of virtual or non-real assets. For example, if you get a statement from your bank indicating a balance of \$300, there is no cash specifically earmarked for you in the bank's vault. Only the bank's computer "knows" of this balance; if it should totally fail, your money would be irretrievably lost. The world's largest securities dealer, Merrill Lynch, maintains stock certificates for its customers' portfolios, valued at three billion dollars. But they don't actually have those certificates in their basement vault; they are "maintained in a computer" where they lead a paperless, virtual existence.

In creating this new virtual wealth, we are also putting monetary value on many well-known non-monetary data bases which represent important sources of power. Take a typical virtual asset, such as the New York Times Index, destroy it and you also destroy the livelihood of thousands who use this data. As a society, we rely as much on virtual assets as we depend on real cash; the example of the New York Times Index shows also how we transform such virtual assets into real form, simply by dialing the computer and printing it out.

Our mind-amplifying electronic machines have created not only much new wealth but also a novel power, almost incomprehensible in magnitude. In the United States, we own and operate one-half of the world's 800,000 machines which range from small to large, from mini to maxi, supporting our information-rich, post-industrial society. The astounding fact is that they do the work of an equivalent clerical labor force of five trillion people, thereby giving our nation a societal mind-amplifying quotient of twenty thousand to one!

Well now, just how did we get into this pickle and who is responsible for all the excitement? It's that little old chip maker in Silicon Valley- that's who! Can't you just see him out there in sunny California, stamping out millions of his little devices? First, he makes a 4 K Chip; no sooner have we learned how to absorb this technology when he comes out with a 16 K Chip and it's "back to the drawing board" for the users. The latest word in this technology race is that he can now make 3M Chips: imagine, 3 million bits of data (300 typed pages, double spaced) stored in an area which is less than an inch square! You can no longer see its details with an optical or even an electron microscope; you have to use X-ray diffraction technology to



control the intricate details of the fabrication process. As a consequence of these startling developments, the dividing line between mini- and maxi-computers is rapidly eroding: The maxi of today will change into a mini by tomorrow. In 1978 I paid forty dollars for a small Casio pocket calculator; it is more powerful than the two million dollar ENIAC of 1944! The only aspect that has never changed is that we still have cost overruns on the hardware and that the software is always late.

The most interesting thing we can discuss next is machine architecture. How did we design computers in the past? We constructed them in the image of man, in the sense that we did the best we could. We thought that engineers should design them and often they decided what features to include, often also without consulting potential users. The user has an essentially different view of what he needs, than say, a design engineer. We at Sperry Univac take great pride in maintaining continued dialogue with users and that explains perhaps the popularity of our systems.

There is a classic analogy to that. In ancient Greece, near the town of Athens, there lived a giant innkeeper by the name of Procrustes. He ran a small restaurant and motel, with just two bedrooms. In one of them he had a long bed, in the other a short one. When a tall customer arrived, he took him into the room with the little bed. There, he chopped his legs off so that the guest would better fit into the little bed; usually, the funeral was the next day. If a short customer came in, he took him to the room with the long bed, then stretched him till he was as long as the bed. As you may surmise, most of Procrustes' guests didn't live long - but they had a marvelous fit on the mattress!

Now, how do we build computers? The answer: we design them without much regard to the problems they are intended to solve. That's why we call them general purpose computers. But problems have a structure of their own. Yet we continue to fit them artificially and forcefully into the architecture of existing machines; in our Procrustean approach, we use such software abominations as Cobol or Fortran to effect a match between machine architecture and problem structure. What we must really learn to do is to build machines whose structures match that of the problem they are to solve; unfortunately, this task will take many more years. Nevertheless, adaptive machine architecture is something to look for in the next decade at which time we will hopefully know more about problem structures.

The present technology used to build electronic systems is, of course, also greatly influenced by economic ("capitalistic") considerations. To develop a useful machine, we begin with a hierarchy of storage media. What we would really like to have is a machine with infinite memory and speed, at zero cost. Unfortunately, such machines can't be built. Therefore, we design machines bottom-up, with only a small amount of very fast but expensive LSI storage, for cache or register use. Then, we have a level of less expensive storage, say core, in larger quantities, but with longer access times yet lower cost. This hierarchical process continues with the addition of disks and tapes,



perhaps even some esoterics, such as laser and videotape mass storage devices. As it turns out, systems configuration development is a very complicated process. Our selection can be made from many components and the three-dimensional trade-off between cost, access time, and storage requirements does not readily yield to mathematical analysts.

Our machines' usefulness has been greatly enhanced through communications. This symbiosis was achieved during the past twenty years as we combined two distinct technologies: digital computers and analog communications. The electronic system of today is both a communicator and a computer. These developments started with circuit switching, some twenty years ago. Then came the more effective message switching systems. Finally, we are now developing packet switching networks and communication protocols, such as X25 or X75. Thus when we think of electronic machines we also think of communications. The real future lies with computer-communication systems, with access to distributed data bases becoming routine operation.

All human beings, not only librarians, are learning how to communicate with computers. This presents another interesting problem. We can micro-miniaturize the memory, the logic and even the cabinets, but there is no way whereby we can micro-miniaturize human fingers! They come in fixed sizes and have changed little in a million years. Keyboards, therefore, cannot be made smaller on the outside, even though we can micro-miniaturize their internal components. Still, keyboards are the medium through which almost all data get into our information systems. Keyboards require fingers to effect an interface between man and machine, of course, but that is not the way human beings "normally" communicate. Can you imagine someone giving a conference keynote address with a keyboard? Human beings communicate with one another by voice and gestures, not by electronic magic. But computerized voice input is still a way off, for good reasons. It has taken Homo Sapiens over a million years to become emancipated and replace his happy grunts with meaningful voice communications. He also developed thousands of languages and dialects in the meantime. It won't even take a hundred years of electronics research before voice communication with the machine will be as good as among human beings!

Why the stress on voice communication? Because it can help us preserve our scarce resources -- which include much of the paper wasted on today's computer outputs. We all have seen the computer room culprit printing out reams of paper, just to locate one error. We can and must replace hard copy output by CRT's, which will be part of future "work stations", where hard copy is only an occasional and auxiliary option. Cathode-ray tubes and voice communication will shortly become part of the librarians' arsenal of tools. It will also include interactive graphics, one of the more expensive devices of today, whose current cost (circa \$100,000) will come down predictably. By 1990 we expect to deploy them in large quantities exactly as we now use terminals with more limited capabilities. Furthermore, they will have flat screens with excellent definition, replacing today's bulky tubes.



The services that librarians have been using most often during the past ten years can be subsumed under the term of time-sharing. This innovation took off initially in all directions, and lots of companies started up but few made it. Yet enough of them have survived to make this now a viable business in the United States and abroad, what with over two-hundred computer-readable data bases available around the clock!

Time sharing permits libraries to pool their resources and to provide greatly improved services to the academic community. Students and professional researchers can now access composite, virtual libraries whose aggregate holdings exceed even those of the venerable Library of Congress. The service is available in real time and employs to advantage such concepts as distributed data bases, computer communications, and relational or query languages of great sophistication. It reflects society's transition to a realtime world, where electronic media provide routinely live coverage of the most casual or dramatic events. This technological advance adds to the psychological pressure which we all experience in terms of reduced reaction times (the bad news); it also brings us ever closer to the speed of light as the achievable limit of global and interstellar communications (the good news).

Hardware developments are surely the most spectacular manifestation of electronic systems history. By contract, development of software and applications lags deplorably. Look at the progress we have made with pocket calculators, programmable pocket computers, and electronic watches; whole industries have been dismantled or eliminated. Keuffel & Esser used to make thousands of slide rules -- they have recently donated their multi-million dollar engraving device to the Smithsonian Institution; it is no longer needed. Mechanical watches, the marvels of yesteryear, are being phased out by their more versatile, more accurate, less costly electronic successors. But that is only one example of the advancing technology. Are there any others? Let me list a few, beginning with pipeline machines. Within every computer, we run programs which operate on data, often in a really helter-skelter fashion. We can picture all data processing operations as two streams, one for instructions, the other for data. By synchronizing these streams, as in pipelines, we can execute programs perhaps a hundred times faster than on "classical" machines, doing as many as a hundred million operations per second! What the Illiac IV can do in one second would take a human being 200 years - and that is without coffee breaks!

For an example of mismatch between problem structure and machine architecture, look at a payroll program, usually written in COBOL. It contains a PERFORM loop which does the first paycheck calculation after the first set of data has been retrieved from the master file; then it does the second and third, until the job is completed. How is the payroll program structured? Serially! But your final product is a pack of paychecks, which makes it a parallel-structured process! Our program should operate simultaneously on a set of, say, fifty data. We can't do that today because of machine design limitations. But array processors and pipeline machines that are coming into use have exactly that capability. Thus they take a good, first step in



the right direction. At least one of today's array processors is two-dimensional; three-dimensional processors are on the drawing board and we are well on the way toward multi-dimensional machines.

A very elaborate example for even more complex machines would be used in global weather forecasting, in which field Princeton's Dr. Joseph Smagorinsky has done pioneering research. His forecasting models are extremely complex and much too large for today's computers. Why not build a machine which is structured like the atmospheric shell which "contains" our weather? Take a billion computers, link them three-dimensionally as in a spherical shell, and let each computer communicate with its "neighbors" to simulate atmospheric energy exchanges and material flows. The innermost shell of the system would, of course, represent the boundary created by the surface of the earth, with its land and sea masses. Many of us are convinced that such a system can be built realistically around 2040. But the concept can be explored today, in terms of associative memories, array processors, and computer communications. Smagorinsky's Global Weather Forecasting Machine is a great example of what we cannot afford to build today. It is physically so large that you couldn't even fit it into the Empire State Building! But as we reduce the size (and cost) of hardware, even machines of this complexity can and will be constructed during the next century. In fact, we will then be able to build machines whose architecture matches any given problem structure.

We are also developing machines whose hardware replaces software -- that is really good news! Everyone working with computers knows about software bugs which can't be eliminated by insecticide sprays. They are "produced" by programmers and systems analysts as they pursue their craft. But hardware compilers have already become available for both BASIC and APL. In another ten or twenty years all modular functionals, many small applications, and even components of major applications will be converted to hardware. Next century's programmers and analysts will make their selection of appropriate hardwired program components from the system's catalog, linking them logically into operational programs, rather than writing thousands of lines of COBOL or FORTRAN. The trend is quite clear: We know how to design error-free or fault-tolerant hardware and expect to transfer this expertise into the machines of the nineties.

Of all electronic innovations, the home computer market has perhaps received the greatest attention. But personal computing and electronic games have turned into an on-again-off-again business, sort of an electronic love affair, you might say. Just how many times can you play Star-Trek, even computer checkers? Sooner or later users discover "an abundance of lack" of useful software for their touted micros, not to mention a callous non-support of their geriatric hardware.

Application of micros to process control will result in more rewarding applications, both in the home and in the office. With their help, energy management in commercial buildings and private residences can be made more efficient, allowing for localized heating and zoning controls, rather than global systems controls of entire



buildings. We will shortly see developments which will apply micros to any process which can be algorithmically described, and thus can also be translated into electronic micro-programs. We note parenthetically that availability of an accurate clock, and a master calendar, lies at the heart of these applications.

Research scientists continually look for problems which permit algorithmic solutions, so that we can cost-effectively employ our micro-processor technology. One of the more spectacular applications is found in computerized axial tomographic scanning devices. These systems allow us to look inside the human body without the need to perform surgery. The most advanced systems with "safe" levels of x-ray irradiation are now being augmented by devices employing ultrasound and infrared wave sources to produce almost equally excellent three-dimensional images, even in color.

The real challenge is neither hardware nor software - it is the brainware. I coined this term twenty years ago but it has received only limited acceptance. It is to signify that the human brain is the most important element of the systems design process. Computer hardware and software wouldn't exist, were it not for inventive human thoughts. The epitome of brainware is perhaps reflected in economic or financial models, introduced by MIT's Jay Forrester in his *Industrial Dynamics*. They can be applied to resource allocation, to structuring budgets (even for the United States), or to monitoring and controlling the input/output dynamics of entire nations. In the "B.C." (before computers) Age, the implementation of such models would have been utterly inconceivable.

The complexity of such models increases with requirements for gigantic data bases, in addition to number crunchers. How does one go about calculating 36 million social assistance payments every month? How does one transmit this data to the Treasury, so it can be converted into checks and mailed out? Did you know that just to sign the 36 million checks would take one person forty years? But the computer calculates and signs them routinely on a monthly basis!

Because of societal and managerial needs, it has become apparent that data base management systems are perhaps the most important component of electronic computers. We marvel when computers are used to calculate PI to a million decimals or to process the data for 35 million checks. But that's not where it's at -- data base management is the name of the game! The growing complexity of our social institutions demands that we collect large volumes of data to effectively manage the colossal components of government, industry, academia.

It has taken Homo Sapiens a million years to come down from the trees. Even if it's going to take us a few more decades to work out the solution to large data base problems, we shouldn't be too impatient. But planning, budgeting, and managing large national systems make it mandatory that we concentrate on DBMS research. For an example, consider the world's greatest economic plan, that of the Soviet Union; it is called the Gosplan. Undoubtedly, it is the most ambitious, totally comprehensive management plan ever conceived. The Soviets envision total computerization of their whole country with data entry



systems, local or regional computers all linked over a (now non-existent) digital communications network to one huge, central computer -- obviously located in Moscow. A distributed, hierarchical data base system is to be part of this national network, linking the Socialist Republics to one another. Thus the Soviets could manage their economy simply by "running" the country with the assistance of a colossal, computerized electronic management model. Even the feasibility of such a system remains in question, not to mention nagging doubts one might have about its actual implementation! There seem to be at least two alternatives: First, such a system just might work, even though it could be in the development stage for decades it could lead to the most colossal failure ever scenarioed. For these reasons, we should certainly encourage - nay, strongly support our USSR colleagues - before embarking ourselves on such a risky venture.

With so much progress, there must be problems and indeed there are. I have mentioned the personal data trail, with a million bits per person, per year, deposited in thousands of data bases. Access to this information, often of a very sensitive nature, is not yet rigidly controlled and our citizenry have already voiced strong protests. Pertinent privacy legislation on the Federal level was passed in 1974; also many States and Municipalities are now enacting tighter controls to ensure that (1) access to this data is restricted to properly authorized persons, and (2) that the process of collecting such data is properly monitored.

To ensure the privacy protection of personal data, we have thus expressed concern over the security of our computer systems. If we could lock up all vital data in Fort Knox (after all our gold is gone), then they might be quite secure. But computers are not built like Fort Knox and we must direct our development efforts toward the design of buildings and systems which can be made arbitrarily secure. It turns out that this is a very difficult problem. Many early machines were physically secure in the basement of the Pentagon, or in similar, secure locations. Access was tightly controlled with many perimeters of guards and walls. But now communications are part of our systems in which we must protect not only host and satellite machines but also the communication network. Obviously, we cannot station armed guards at every 100 feet of the AT&T Empire, no matter how tempting such a solution might appear to those who try to solve our unemployment problem. Instead, we must find a different solution. The answer, in part, is an unpleasant one - surveillance! As we have already pointed out, those seemingly innocuous data in our machines are quite valuable. They are the virtual assets of our society, as distinguished from its real assets, such as cash, gold, or buildings and grounds. Your money in the bank or the stocks in your portfolio are virtual and "reside" in computerized data bases. Even accounts receivable or personnel data have become highly prized virtual assets; we cannot do without them. They must be protected and access to them must be restricted to trusted persons, perhaps by creating a new and privileged class of people. As with the case of top secret data, access to them is not an "inalienable" right, but a privilege! As computer-related crime grows, our society must collectively decide



what precautions to take, and what price to pay for protection of our virtual assets. We may have to "decree" that people working with sensitive computer data will be placed under surveillance, to give maximum protection to these assets. An example of the magnitude of this problem should suffice: Electronic Funds Transfer Systems. The world's largest EFTS is probably that of the Federal Reserve, called Fedwire; it is switched electronically through Culpepper, VA. It is physically secure because of its location in the Virginia mountains. It is also electronically secure, being a triply redundant switch with encrypted messages used for all transactions. The transfer of funds between member banks and their affiliates only ("funny money"), through this switch, proceeds relentlessly to the tune of a hundred million dollars per minute! The Fifth Federal Reserve Bank in Richmond, custodian of the switch, has received numerous, gratuitous offers to help reprogramming this computer program -- all are being turned down, of course.

The banking system as a whole takes indeed precautions to protect its virtual assets against the growing wave of computer crimes. Where criminals formerly walked into a bank to hold it up, they now carry on from afar with the help of computer terminals. Computer crime is probably more extensive than commonly believed. I once reported, in a lighter vein, that 84.6% of all computer crimes go undetected; this "fact" has since been widely reported and few caught on to the hoax!

The proliferating pervasiveness of electronic technology and its transfer into broad segments of our society are indeed a real danger. Millions of microcomputers are already in private hands; many of them will soon do battle with our large machines, which hold trillions of dollars in virtual assets. Remember that these micros can reach every electronic nook and cranny of this country, and soon, the world. Thus we must be concerned with the security of computer-communication systems.

For millenia, the important role of the library -- and of librarians -- has been firmly established. As institutions, libraries are often part of larger organizations; they are predominantly concerned with methods, skills and systems designed to acquire, store, preserve, and retrieve recorded information. The classical library dealt with real books, often in gigantic numbers, collected in the "stacks." Thus libraries learned to cope with the mechanical problems of assembling "hard copy" in systematic ways and providing easy access to it. But the library's function has changed. It now transcends classical systems technology, resulting in a number of pilot programs and interim solutions. Mechanized handling systems, automated cataloguing and indexing, and finally replacement of the classical card index by computerized systems are but a few examples of the winds of change that are sweeping through the libraries. Thus it does not come as a surprise that librarians are teaming up with computer and information specialists in an attempt to design the "library of the future;" just as office automation and word processing are being examined in an effort to develop an "office of the future."

What then, we might ask in observing these changes, are the most significant, symptomatic technological trends which will impact libraries and librarians during the coming decade? The simplistic answer, of course, is that the trend is evolutionary rather than revolutionary. Resistance to change and economic considerations support such a conservative forecast, even though rather radical changes will take place over the very long range.

For a possible scenario, consider universal availability of very intelligent terminals, coupled with interconnected data base systems among the tens of thousands of libraries in this country. Consider also the obvious need to conserve energy on a grand scale; and the ability of researchers or general users to access such systems from their homes and offices, through easily learned, interactive query language systems. In such a scenario, growing numbers of users will forego "trips to the library" and "carrying out books or reference materials." Rather, they will let the system do the work for them, through relational inquiries and from their own terminal "work stations." They will "let their fingers do the walking."

As part of such a scenario, we can readily envision interactive computer networks serving as repositories of manuscripts, not only prior to publication, but also "instead of." With the scientific information explosion proceeding at the rate of one million bits per second, the replacement of current hardcopy systems for the storage and retrieval of knowledge by distributed, on-line data bases of abstracts and full texts becomes a distinct possibility.

The pervasiveness of electronic power will affect all of us, at home and on the job. Librarians will soon see voice terminals added to their current hardware. They will have virtual books on virtual computer shelves, not to mention the demise of their cherished 3 x 5 cards. These events will affect the work habits and routines of individual librarians, and the organizational structure in which they are employed, as well. We must all participate in charting this progress which is destined to emancipate mankind, liberating us from the tasks of rote and drudgery, now so prevalent. As Norbert Wiener so aptly put it, we must strive to design a world in which we make human use of human beings!



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October 3, General Session:  
Luncheon Speaker, Dr. Margaret Park,  
University of Georgia, Athens, Georgia





## LIBRARIES IN THE 1990s: THE ROLE OF STANDARDS

Dr. Margaret K. Park  
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Luncheon Speaker - 3 October 1979

It is a brave person, indeed, who attempts to predict where bibliographic standards will take us over the next ten to twenty years. Nevertheless, it is an intriguing opportunity to do some crystal ball gazing, to review some of the efforts which are currently underway in the national and international standards arenas -- especially as they affect computer-readable bibliographic data bases, and to share some observations about the standardization process and how the course of future events in the standards area can be affected for the benefit of the information profession.

Standards can be a topic of considerable emotional involvement, not unlike that of religion and politics, especially to those who are intimately involved in the day-to-day committee meetings, the preparation of innumerable drafts, and the constant jockeying for position and points of agreement. The work of developing and implementing standards is, perhaps inevitably, done by a relatively small number of people in the library and information professions -- but not because there is any desire to limit the involvement. Rather, standardization is, in a way, a specialty area which requires a great deal of time and study, and most of that time and study is volunteered effort borrowed from the hours nominally intended for doing "real work." There is no recognized job description of "standards developer" in the library and information professions, so the time and effort devoted to standards is treated as overhead. This is most unfortunate. The work of developing standards deserves to be seen as more than an overhead cost item. It must be viewed as a necessary support to the day-to-day operation of a library or an abstracting and indexing service or a publisher or any other functional unit of our profession, rather than just an altruistic contribution to the profession. Changes in attitude have to be made in this regard, and they are, in fact, already coming about.

The driving force in this attitude change is automation. Prior to large scale automation, the "cottage industry" approach, with each library or abstracting and indexing service doing its own thing in its own way, was acceptable. With automation entering the picture, however, there is a growing realization that it is simply not economically feasible to automate all libraries, all A & I services, all national bibliographies, all union lists, etc., without sharing some of the effort. Automation is too expensive, and knowledgeable individuals to do the work are too scarce.

Joint or shared projects imply a commonality of policies and practices, hence standardization enters the picture. Standardization is certainly not new to the library and information world, of course.



Cataloging codes, for example, have been around for a long time. But many more differences could be tolerated prior to automation. The computer has a way of being intolerant -- or, at least, of being tolerant only at great expense.

The MARC project (Machine-Readable Cataloging) initiated by the Library of Congress almost two decades ago was the bellwether of automation-related standardization in the library field. And there have been a number of developments in the area of national and international standardization work which have grown out of those MARC beginnings in the library world. Parallel to the MARC development has been a quite different progression toward standardization in the abstracting and indexing (A & I) world -- the services that generate some of the world's largest abstracting and indexing publications for (principally) the journal and technical report literature. That effort, too, has led to separate developments at the national and international level. Lastly, and perhaps most importantly, there are efforts currently underway at the international level to bridge these two, very different, worlds. The structure of automated bibliographic systems over the next ten to twenty years may well depend on what happens to this so-called Common Communications Format (CCF) for bridging the two communities.

### Terminology

The terms "library sector" and "abstracting and indexing sector" need some clarification with regard to the context within which they are being used here, since they do not necessarily refer to organizations, but rather to functions. By "library sector" is meant those organizations that provide detailed bibliographic descriptions of published materials -- both print and non-print -- following some widely recognized cataloging code. For the English-speaking world, this usually means the Anglo-American Cataloging Rules (AACR) or some modification of it. Subject access, if provided, is usually limited and is based on the LC Subject Headings or some similar subject heading authority source. Emphasis tends to be placed on serial and monographic publications. By "abstracting and indexing sector" is meant those organizations that provide detailed subject analysis in the form of indexes and, usually, abstracts, primarily of the journal and technical report literature. Bibliographic description is usually limited to that minimum description necessary to identify the appropriate works for subsequent location using traditional library sources. A specific organization, whatever its name, may do either or both of these functions. The National Library of Medicine and the National Agricultural Library are cases in point; they belong to both the library and the abstracting and indexing sectors, as defined here. There are a number of special libraries, especially in the fields of science or technology, which would be considered primarily in the abstracting and indexing sector according to this definition; and there are a few abstracting and indexing services which follow traditional cataloging and classification practices closely enough to almost be considered to be in the library sector. There is a large gray area, of course, between the two sectors where most actual organizations reside, but for most purposes individual organizations will identify more closely with one sector than the other.



## The Library Sector

The development of bibliographic information interchange formats for cataloging data in the library sector has had a pervasive influence on library-related publications and services over the past decade. The MARC family of formats developed by the Library of Congress in the mid-1960s was the first such set of interchange formats. They do, of course, reflect very closely the cataloging practices and policies of the Library of Congress, and, as the name clearly reflects, were designed as formats for machine-readable catalog records. This pioneering work by the Library of Congress has given rise over the past decade to other nationally based MARC systems, differing to varying degrees from the original LC MARC. There is now a British MARC, a Canadian MARC, a German MARC, a MARC for the French-speaking countries known as INTERMARC, and others. The MARC formats for the English-speaking countries tend to be similar in that they reflect the cataloging practices specified in the Anglo-American Cataloging Rules, but the others look very different indeed since they are based on different cataloging codes. Certainly, it would be difficult to exchange records between even the MARC systems based on AACR, but next to impossible for those based on different cataloging rules (e.g., the German MAB-1 format) because the data content is so different.

Recognition of this diversity, hence the difficulty (if not impossibility) of interchanging records among various national MARC-like systems, led to the initiation of development effort on a Universal MARC format, which came to be known as UNIMARC. This effort, under the auspices of the International Federation of Library Associations and Institutes (IFLA), resulted in draft UNIMARC interchange specifications about 1977, and a final version is scheduled to come out this year. This work reflects the general principles of the various MARC cataloging formats, but does so in a manner which attempts to avoid dependence on any particular cataloging code.

At the same time as the UNIMARC work was going on, and not totally independent of it, there have also been international developments in the area of cataloging standards, much of this work also taking place under the umbrella of IFLA. These standards are known as the International Standard Bibliographic Descriptions (ISBDs), and there have been ones issued for monographs (ISBD(M)) and for serials (ISBD(S)). Much of this work found its way back into the revision of the Anglo-American Cataloging Rules, and incorporation of the ISBDs was a major objective of the work on AACR2. But during the AACR2 work it became increasingly clear that independently developed ISBDs were no more consistent than were the independently developed MARC formats, so specifications for a General ISBD (ISBD(G)) were drafted to serve as a guideline not only for future ISBDs but also for revision of AACR. The General ISBD has, in turn, served as the basis for the data recording portion of the UNIMARC specifications.

So far, there has not been any attempt to actually implement the UNIMARC specifications in a real system. The definitive version is scheduled for publication this year; but even before it has been published and subject to comment (or criticism) from the library



world, there has been a growing pressure for reconciling the differences in machine-readable interchange formats which exist between the library sector and the abstracting and indexing sector. Pressure is coming about primarily from the international arena, specifically within the General Information Programme (PGI) of Unesco, to develop a single format which the national bibliographic agency for a country can use to satisfy the requirements for both the library world and the A & I world. Very few countries in the world, especially the developing countries, have the resources to do things twice for their bibliographic materials, as has tended to be the case in the Western world; and since much of the international standards work is either directly or indirectly funded by Unesco, considerable attention is being given to developing a Common Communications Format (CCF) which will bridge the two sectors. More will be said about this later.

### The A & I Sector

The abstracting and indexing sector differs considerably from the library sector in its evolutionary development of interchange formats, primarily because the A&I sector does not have the implicit leadership agency which LC represents (at least for the research libraries). Rather, the large A & I services, primarily in the scientific and technology disciplines like chemistry, biology, engineering, and so forth, and in the large technology-based government agencies, like DoD, NASA, and what is now ERDA, developed their own internal formats for machine-readable data bases more or less independently. Standardization, where it occurred, usually occurred only within a given discipline or mission sector and was most prominent among those international mission-oriented systems like INIS for atomic energy and AGRIS for the agricultural field. There is also some standardization among the large technology-based government A & I services based on the COSATI rules.

Like the library sector, though, the A & I sector recognized about a decade ago that some standardization was essential if interchange was to be feasible among the discipline-based abstracting and indexing services. The International Council of Scientific Unions Abstracting Board (ICSU-AB) initiated work on a Reference Manual for Machine-Readable Bibliographic Data Bases in the late 1960s, then subsequently joined forces with the UNISIST program of Unesco to publish this Reference Manual in English and French about five years ago. An office was also set up at the British Library with partial support from Unesco to maintain and to promote the use of this manual, this office becoming known as UNIBID (UNISIST International Centre for Bibliographic Descriptions). A revised and extended version of this manual is scheduled for publication later this year or early next year. There is at least one abstracting and indexing service in the Washington area that has adopted the UNISIST Reference Manual specifications for both internal processing and exchange tapes of its data base.

In many respects, the two sectors -- library and A & I -- are at the same point internationally. Each has issued at least a preliminary version of an international exchange format specifications document -- UNIMARC for the library sector and the UNISIST Reference Manual for



the A&I sector. Both are feeling the pressure by Unesco to consolidate their specifications into a single format, which raises again the question of a Common Communications Format (CCF).

### CCF

Following a conference on bibliographic exchange formats held in Taormina, Sicily last year (April 1978), an ad hoc committee of representatives of international groups was set up to look at the feasibility of a "common communications format." A plan of work was subsequently drawn up, and a contractor was employed by Unesco to do the preliminary work on a comprehensive data element dictionary covering not only the UNIMARC and UNISIST Reference Manual sets of data elements but also some of the other major interchange formats of the world. This work is now well in hand, and the ad hoc committee is meeting in October to draw up the specifications for the CCF itself.

A very preliminary draft proposal drawn up by the contractor represents a most unfortunate and, ultimately, non-productive approach to the problem. This proposal takes one of the formats studied, specifically the UNIMARC format, and tacks onto it certain concepts, such as bibliographic levels, from the UNISIST Reference Manual. At a recent meeting of the UNIBID Advisory Committee, which oversees the interests of the A & I sector in the modification and extension of the UNISIST Reference Manual, there was a number of very strong criticisms of this preliminary proposal, largely because it failed to recognize the inherent differences in function and mission between the two sectors. It remains to be seen whether a bridging format -- a CCF -- acceptable to both communities is actually feasible.

### Approaches to Standardization

Standardization is, of course, a process of resolution of conflicting interests and points of view -- what the sociologists call accommodation. Textbooks on Sociology recognize four basic approaches to accommodation, and most, if not all, have seen use in the standards arena.

The first method of accommodation which is cited is "victory," where there is a clear-cut winner-loser situation. This approach to resolving conflict generally comes about when one party is clearly dominant over the others involved. There is one winner and the others are losers. But the result can also be the same when it is not a question of dominance, but rather aggressive participation by one of the parties and either defensive measures or non-participation by the others. In either case, only one side's interests end up being accommodated. It has been only with considerable difficulty and a few ulcers that this method of conflict resolution has not been more common than it has on standards of concern to both the library and A & I sectors. In some cases at least, the foot-dragging and sandbagging which has gone on in both sectors has, ultimately, been the salvation of both communities, though each would probably disagree on those specific topics where they've lost the advantage. For example, the COSATI community has been well advised to resist the pressures to convert everything among government agencies to the MARC format. Those



applying the pressure simply do not understand the loss to the bibliographic world implied by subordinating abstracting and indexing practices to cataloging practices. Both can and must co-exist as equals, each serving its own special niche in the bibliographic world.

A second conflict resolution technique is "compromise," where each side makes concessions to the other. Other names are conciliation, arbitration, negotiation. It is based on the philosophy that "half-a-loaf is better than none." This is a most undesirable approach, when it comes to standards, because it means the problems, and often the solutions, are reduced to the lowest common denominator or to something which nobody likes. But it happens all too often. A standards subcommittee did exactly this not long ago. There were two proposed changes to an existing standard put forward by a representative of one of the two sectors to a subcommittee which was dominated by the other sector. The subcommittee first rejected the proposal outright (i.e., the victory accommodation approach), then later compromised by accepting one suggestion, but not the other, as a token concession. The compromise did help a little, but it was the information community which was the real loser.

A third conflict resolution approach is "toleration" which exists in this country with the toleration of many diverse religions and different points of view as to political persuasion. Beliefs are based on faith and are difficult, if not impossible, to change. So the only means of resolving conflict is to tolerate each other's views, often without genuine understanding or appreciation. This has largely been the case in the past in the bibliographic world. Each sector has gone its own way, which was fine when the interactions between the two sectors had human intermediaries in the form of librarians and information specialists and well educated users to bridge the differences. But this approach does not lead to the desired objective, namely, achievement of a common purpose or practice, or as in the case discussed earlier, a Common Communications Format.

A fourth approach to conflict resolution, and perhaps the least often used in any type of conflict resolution, is called "superordinate goals." This approach involves the attainment of goals beyond the resources and efforts of any group alone to arrive at a solution which is better than either group alone can achieve. This approach involves carrying forward the requirements and objectives of each of the parties involved in the conflict, but not the solution. Accommodation is achieved by arriving at a solution which is above and beyond any of the former sector-dependent solutions. Sociological research shows this approach -- superordinate goals -- to be the most effective means of reducing inter-group conflict, but it is perhaps the least often used because it demands impartiality and objectivity above all else. (How many people can do that when personal esteem and jobs are at stake?) Nevertheless, adoption of the "superordinate goal" approach to standardization, especially where it involves inter-sector differences, is the only satisfactory approach if standards are to make a positive contribution to the future of the profession. Otherwise, the approach is toleration, or a status quo, with two different sectors, as at present. Or victorious dominance of one at the expense



of the other, and perhaps a real loss of important resources for the profession and its clients. Or compromise, in which case neither party really wins, and it is the profession and its clients which are the real losers. But with the superordinate goal approach there is a very real possibility of achieving the best possible by putting everyone's talents and energies to work for the common good. If this approach is adopted, the same order of magnitude improvement in products and services can be achieved in the next ten to fifteen years -- driven by automated systems -- that has been seen in the past ten to fifteen years.

### Individual Contributions

There are a number of very practical contributions which librarians and information specialists, as individuals, can make.

First, there can be an awareness of the four different methods of resolving conflict and conscious advocacy of the adoption of the superordinate goals approach whenever it is appropriate. This applies not only to standards but to all areas of endeavor where valid differences of opinion exist. And if that doesn't work, agreement to disagree can be reached based on a firm knowledge that the problem is, indeed, irreconcilable (as some may well be). Time and effort and money certainly do not need to be wasted on unsolvable or irreconcilable problems.

Secondly, proposed standards can be reviewed and critiqued with a view to how they were achieved and what the potential implications are -- again working from the knowledge of the four approaches to conflict resolution. To say that a standard is "better than nothing" or "not worth revising" is a cop-out. The time must be invested to offer constructive criticism which can subsequently be used for improvement. This opportunity may occur more frequently than might be assumed -- within a given organization, within DoD, with proposals issued by DDC or NBS, or within SLA or ALA.

And, lastly, support can be provided for standards developed by the superordinate goals setting approach by giving objective and unbiased consideration to new, and perhaps unusual, proposals, especially when such proposals deviate significantly from traditional practice. Admittedly, not all that is new is good, but neither is all new work necessarily bad. It is important to keep an open mind and to encourage professional colleagues to do likewise. Grassroots support will be essential if a transition to predominantly superordinate goals accommodation is to be made. And it is this approach which offers the greatest potential for making standards an effective tool in the development of new products and services over the next decade.



October 4, General Session:

Mr. Mel Day, Director, National Technical Information Service, Department of Commerce



Mr. Mel Day, Mrs. Ruth Smith and Mr. Hubert Sauter



## ADDRESS TO MORNING GENERAL SESSION

Mr. Melvin Day  
Director, National Technical Information Service  
Department of Commerce

4 October 1979

Thank you for the opportunity to share with you some thoughts as to the present posture of the National Technical Information Service and some plans that we have at NTIS for the future. In discussing NTIS products and services for the 1980s and the 1990s, I would like to begin with 1979 because what we are doing now will carry over well into the 1980s. In former times NTIS could afford to be fairly independent. Now, however, we are going through a metamorphosis and hope to develop a new attitude of trying to bridge the gap between NTIS and its customers. Underlying this difference in approach is a new philosophy, based on high quality user services and an earnest desire to solicit and make use of feedback from NTIS customers. This healthy and timely change can only occur through the spiritual revitalization of NTIS staff members and the realization that without this change NTIS as an organization would not survive.

NTIS is an information services organization. It receives very little Congressional appropriation and most of its costs must be paid from revenues. We operate like a business but have all the constraints of a Government agency. All the costs of its products and services, including salaries, marketing, promotion, and postage are paid from sales income, not by tax-supported Congressional appropriation.

We are presently undergoing a top-down systems analysis. Every process, procedure, practice, policy, product, and service is being reviewed exhaustively to establish new emphasis on: (1) the quality of our products and services, (2) their timeliness (turnaround time), and (3) prices (we intend to arrive at lower production costs). We have made progress in several important areas:

- o Improved turnaround time as a result of new order processing procedures
- o Additional telephone lines now available at sales desks
- o An 800 number is available for rush orders
- o Master Charge and VISA credit charging are now available in addition to American Express
- o Reports are no longer announced until they are actually processed into the collection
- o Better interface with professional user groups such as the Hang-up Group, SLA, Military Librarians, etc.
- o New emphasis on ways to standardize cataloging rules, corporate authors, etc.

These lines of endeavor represent only a beginning. We have been busy developing a new foreign technology acquisition program and a major expansion of data base service.

There has been much discussion of the recently proposed revisions of Title 44 (H.R. 5424). This revision is of potential importance to all of us and brings to mind some of the important differences between the NTIS and the Government Printing Office (GPO). It should be noted at this time also, that we have been trying to develop a closer relationship with the GPO. We have established several joint task groups to study the organizational interfaces and mutual problems.

It should be pointed out that GPO is subsidized. They routinely "override" agency printing requisitions as they are submitted to provide copies for depository library distribution. Superintendent of Documents (SOD) considers GPO his distribution and sales agency. GPO actually maintains only about 20,000 items per year in print, and only copies of those items are available for sale. When printed stock on any title is depleted and sales activity is low, the item goes out of print and is no longer available from GPO. NTIS, on the contrary--in line with its role of maintaining a technical information archive, maintains in print 1.1 million publications and lets nothing go out of print. The average number of sales per title is nine copies! NTIS serves as an archive as well as a sales agency, therefore, and prices are higher at NTIS because it is not subsidized.

Let me emphasize some points I mentioned previously. We are sensitive to the fact that technology is moving very fast these days. We are going through a major updating of our computer facilities. NTIS will provide the same kind of services for Government data banks that it now provides for Government-generated technical reports. This will be a major thrust. There will be more emphasis on sharing--manipulation of new bibliographic data bases, etc. Coupling of the economic squeeze and new technological advances will cause more and more shared systems. More organizations are buying and operating mini-computers, but most have limited storage. Video disk technology will store 54,000 pages, as an example. The National Library of Medicine is experimenting with marrying the video disks and a mini-computer. Video disks are cheap, but at the present time high costs are associated with making the masters. NTIS is interested in video type products and the possibility of publishing some materials on video disks. We are also exploring ways of using optical scanning equipment more effectively.

A significant trend for all of us in the Government is the OMB's increasing concern that Government information services are not recovering their costs. More and more Federal agencies will be required to do this. Recently I appeared before Congress to defend a budget for the Smithsonian Sciences Information Exchange--the program responsibility of which was assigned to NTIS as of 1 Oct 1979; full management responsibility is to be effective 1 Oct 1980. The tone of Congressional questions was to support OMB in its push to recover costs associated with public access to information produced by/for the Government.



A final comment on Title 44--recent versions of the bill are better than the original revisions; however, it will require changes in the way we do business. In the new version, the President has the right to veto regulations, and agencies are made accountable for all of their publications. These comments are based on discussion points which appear to me to be the most useful and interesting to you in your dealings with NTIS and Government services generally.

Thank you.



October 4, Luncheon Speaker: Ms. Madeline Henderson,  
Manager, ADP Information Analysis Group, Institute for  
Computer Science and Technology, National Bureau of Standards



## EFFECTIVE TOOLS OF GOOD MANAGEMENT

Ms. Madeline Henderson  
Manager, ADP Information Analysis Group  
Institute for Computer Science and Technology  
National Bureau of Standards

Luncheon Speaker - 4 October 1979

I'd like to talk to you this morning about a problem that faces all of us, librarians or information center managers, and this is the need to recognize that we have to stop sometimes and evaluate what we are doing. After all, a library or information center is a service function -- and a service can be justified only if it fills a need and does that efficiently and effectively. It behooves us to stop every once in a while, to step back and not only to review what we are doing and the way we are doing it, but also to question whether we should continue to do what we're doing. We need to re-orient, perhaps to make better use of resources, to re-evaluate, and importantly, we need to work with our own people to accomplish in a smooth way any changes that we deem desirable.

I thought to expand on this idea a little bit today by recounting an example of an exercise in program evaluation and organizational change which I conducted fairly recently. Let me set the stage: I was Chief of the Computer Information Section, in the Information Technology Division of the Institute for Computer Sciences. The Institute is one of the major organizational units in the National Bureau of Standards. The Computer Information Section is a specialized information service in the computer sciences and technology serving NBS staff, other federal agencies, people in state and local government, and in the private sector as resources permit. One reason why a service like the Computer Information Section needs to be evaluated periodically is that the field of computer science and technology is growing rapidly -- some even say exploding, and information about computers and computer sciences is also growing. Therefore our collections were growing in size and complexity. It was pertinent and timely to restate the proper goals and objectives of the Computer Information Section and determine anew the best way to achieve those goals.

Another reason for program evaluation was that our information service constituted a major program element in the responsibilities of the Institute for Computer Science and Technology and was therefore subject to close scrutiny, especially during the annual budget cycle. It was reviewed annually for relevance to programmatic objectives and, possibly, reprogramming action. That's a phrase that probably strikes close to home to most of us. In these days of limited resources and competing responsibilities, it behooves us to look closely at our work, to take stock, and to evaluate our programs.

Let me briefly define program evaluation. A program can be defined as an activity undertaken by a government agency to provide a service to some public. Program evaluation then is a management tool which seeks the systematic examination of those program activities to determine



the full range of their effect on the public supposedly to be served. Program evaluation is primarily retrospective, in that it focuses on actual performance and it's a tool which helps us decide whether a program should be continued or modified or perhaps expanded or reduced. It may also indicate action which can help remedy a possible problem situation.

I believe that the value of program evaluation as a management tool, as a technique, lies in the structure it provides to aid in decision making. It forces us to quantify factors wherever possible, and to think clearly about the objectives of our activities. Program evaluation of an information system, for example, requires a definition of objectives and it measures any portions of the program which can be quantified.

Program evaluation of an information system can involve a number of techniques for analysis of such a system. One technique is the user study, which can be done in a number of ways. One can analyze reference questions, or can count circulation records or loan records, for example. Alternatively, one can go directly to users and determine their satisfaction with the system's services. One of the ways to survey a user population is through a mailed questionnaire, another way is to conduct face-to-face interviews, and still another way is through a telephone survey, which combines the advantage of the questionnaire with its structured questions and the advantage of a direct interview, even though by telephone.

The critical-incident technique asks the respondent to focus on a pertinent event or experience; for example, the last reference question posed and the service received in return. It's easier for the respondent to give meaningful and measurable data about a specific incident, rather than just saying he "liked" the service.

When evaluating information systems in the course of program evaluation, one tries to measure cost, effectiveness and benefits. This is difficult because there's a great deal of doubt about what constitutes cost and how one measures benefits. On the other hand, anything that can be done in the way of measurement is useful. So one way is to analyze operational and costing data within the flow of work in the information system. Each portion of the flow is analyzed to show the percentage of staff time, equipment cost if applicable, and other relevant costs. Then calculations are made for dollar costs of activities within the total work flow in an information system as a means of measurement during program evaluation.

The other definition I would like to give is that for organizational development, which is an application of behavioral science knowledge that provides managers with a tool for managing change. It can be defined as a process of planned change. Organizational development methods start with a diagnosis, followed by a phase in which alternative action programs are considered and, of course, one program decided upon. The action program is followed through, an assessment made, and the results fed back in a recycling procedure. Such techniques are tools for managers to effect change. Changes are more likely to be accepted by people if they have a strong voice in the



change itself, a sense of participation in choosing among various possibilities.

One of the techniques of organizational development is called action research. In the case history that I'm going to describe I used the tool of action research.

To go back, now, to what I said in the beginning, I'd like to talk to you about program evaluation and organizational change in the context of a program evaluation that I conducted fairly recently. I had become Chief of the Computer Information Section about one year before we launched this program evaluation. It was felt by management at that time that the computer information activity was a weak program that needed improving. I was also Program Manager of one of the program elements in the Institute for Computer Sciences and Technology, in which the Computer Information Section resided. Let me make clear that distinction. The program elements are looked at closely in the budget cycle. As Manager of a program element for technical advisory services, and Chief of the Computer Information Section which was part of that program element, I was faced with strong pressure to reprogram our resources to strengthen the overall program element. So it behooved us to take stock and to try to propose to top management a way to reorganize and reorient our resources to more closely match, and therefore be more relevant to, the programmatic objectives of the Institute, one of which was the provision of technical advisory services to other federal agencies.

I had learned, while participating in the American University Key Executive Program and working on a Master's Degree in Public Administration, the principles behind all of these good management tools, which I was able to use to good advantage in this program evaluation exercise. One technique for program evaluation is the so-called "before and after evaluation" with comparison of actual versus planned performance. This was the type of program evaluation that we started. For the "before" part of our evaluation effort, we had undertaken, in 1975, a study of the impact of computer information services on the user community. We did a telephone survey: we obtained a statistically valid subset of our total population, and carefully designed a questionnaire, working with sociologists on the Bureau staff. The results of the survey showed that our users were very satisfied with our service, felt it was valuable, that it was unique in scope and resources, that we had a very knowledgeable staff, and that they recommended that we do more of same. Of course, we would need more resources in order to continue the service at that same rate of excellence, in the face of increasing demands and rising costs. When the survey was done, unfortunately, we sat back and thought, "Isn't that nice?" and failed to use the results as an argument to management that we needed those additional resources.

But, more recently, we looked at the results of the survey in terms of program evaluation, and as I noted earlier, such evaluation makes one face the decision of whether a program should be continued or modified in the face of constant or shrinking resources. It was then obvious to us that we should modify or reorient our program. In other words, if a program should be continued because people attest to its



utility, if it can't be expanded because of limited resources, and it shouldn't be reduced in light of testimony of the users, then some kind of program modification is in order.

We determined that our internal operations needed to be streamlined to insure that most of our effort would be placed on products, so that our users would get useful information in a timely fashion but our costs would be held at the required level. In this way, the services we determined were needed in meeting the organizational objectives, or the program objectives for technical advisory services, would be supplied in a planned and organized manner so as to reach a maximum number of users.

Our first step was to develop a flow chart of our operations and to divide them into sectors such as input processing, cataloging, production of computer-based indexes, and answering reference questions. We costed those out by assigning personnel time to each of those steps in the process, adding the cost of equipment, subscriptions, etc., and determining, thus, the percentage of our total budget spent on each of the sub-elements in our total work flow.

Next, we added a new element to our work flow, namely, the publication of informational products based on our own use of our information resources, and we realigned staff time accordingly. We determined, for example, that the input or cataloging task could be simplified greatly by adding new reference tools and by subscribing to additional on-line data bases. We would put more of our professional time and effort into the publication of the new informational products, by which we hoped to reach more users in a more timely fashion. We recalculated our cost in terms of staff time percentages, and new equipment needed in order to increase our use of on-line data bases and to improve the input of our own cataloging data to produce our computer-based indexes. We found we were able to cut down the percentage of our total budget that was spent on the processing of bibliographic data, to increase the percentage of time spent on reference questions, and, more importantly, to spend nearly 50% of our resources on the production of our new information products.

I might add, parenthetically, that we also developed a new set of program objectives, and were able to persuade top Bureau management that we were indeed on the right track, we knew where we were going, and we were going to be a much more effective operation than perhaps we had been. The decision came down to let this reoriented program have a fair chance to prove itself.

Remember that I said earlier that we had undertaken a "before and after" type of program evaluation. The "after" took the form of a survey, conducted under contract, of the federal ADP community. We asked the members of that community about their knowledge of and satisfaction with the information products of all of ICST, not just the Computer Information Section, as projected above. Remember that one of the things we decided in our program evaluation was that the staff itself would make better use of our information resources to make us more nearly an information analysis center. So a couple of the reports in that series reflect our work in technology assessment of



foreign computer development and statistical surveys of computers in the federal government.

In addition to program evaluation, I was also concerned with organizational change. We used the techniques of action research to insure staff participation in the decisions about the changes needed in our operations. Action research is kind of a fun technique. We made up a very simple questionnaire, four little questions that asked the staff, What do you like about your job? What do you not like about your job? What do you find easiest about your job? What do you find most difficult about your job? I asked the staff to really think about these questions and what they meant, then to write their answers on a form I gave them to send them in to me. I then cut and pasted the answers together, so that the source identities were lost but the answers were grouped for review. When we got together for a staff meeting, everyone could see the sum total of the group's feelings about what is easy, what is difficult, what was liked the most and what was liked the least about the Section's activities. It was funny, but the thing they liked the least was the constant interruptions on the job, but the thing they found the most challenging was the variety in the job! Everybody liked working with people, answering reference questions, being immersed, if you will, in information about computer sciences and technology but at the same time the constant interruptions, the constant threat of, or actual, reorganizational efforts were unsettling.

The point I'm trying to make is that as a management tool, the action research project made it possible for us all to face what was happening, what had to happen. The reorganization or realignment of our work, the shift from a reactive to a pro-active stance, from answering questions as they came in to actually analyzing data, compiling them, and publishing the results in reports, had to be done. It turned out that some of our people did not like the shift, but the action research project made it possible for them to face what was happening. They were able to determine, before they drifted along feeling unhappy about the situation, what actually were the new objectives and to face whether they were or were not going to fit in comfortably in the new organization. It was, hopefully, a less traumatic organizational change than it might have been.

The point of this anecdote is that program evaluation and organization change as management tools work, and work well. It is imperative that we take the time occasionally, perhaps periodically, to conduct a systematic program evaluation, to be honest about what it is we are trying to do, what is the audience we are trying to serve, what are the resources that are available to us or apt to be available to us, and how then to bring all of these factors into line so that we do indeed manage a service that is doing its job, reaching its goals effectively and efficiently.



Mr. Richard W. Boss,  
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## A SKEPTIC'S GUIDE TO THE PAPERLESS SOCIETY

Mr. Richard Boss  
Information System Consultants, Inc.

We have all heard presentations about the paperless society at various professional meetings. The scenario is that books and journals will disappear from libraries. This is a simplistic view of technology, in my opinion, because what tends to happen is that technologies get overlaid, one on top of the other and we get a very diverse situation of many technologies competing, rather than a technology displacing an older pattern to which we have been accustomed. So we have to cope with this diversity. The difficulty which faces libraries is not whether or not to adopt a technology, at what time or in which right environment, but rather from which of several competing technologies to choose. If, for instance, you want to improve your acquisitions operations, it is not just a question of contacting a bibliographic utility, whether it's UTLAS, RLG, OCLC or WLN and arranging to subscribe to the acquisition subsystem of that particular bibliographic utility, because you have other alternatives. You may also contact Brodart or Baker and Taylor and arrange to have their services, which are on-line ordering systems which are gradually being augmented with funds control and various other acquisitions features. Or you can go to R. R. Bowker, a subsidiary of the Xerox Corporation, which is developing a multi-vendor ordering system which will connect book publishers who are presently accustomed to supplying that company with their information for Forthcoming Books in Print and Book in Print to their computer system and also connect libraries and book stores so that they will be able to call up information about books coming into print almost as soon as that information has been transmitted from the publisher to the R. R. Bowker Co., and be able then to place orders on-line with any one of a number of possible vendors.

But there are choices -- to go to a company such as CLSI, Dataphase, or GLAC for a turn-key stand-alone minicomputer-based system with a software package for acquisitions.

I could go on with other technologies. The point is that we have gotten to the stage at which it isn't just a question of saying, "Shall we replace our present manual acquisition system with an automated system?" Instead, it has become a matter of laying out all of the available options that we have, and choosing among them. And when one has to choose among a number of different technologies, it means that one has to know one's own requirements extremely well. It also means that one has to be able to effectively analyze, not the nuts and bolts or the insides of these technologies, but rather their utility, their functional capabilities. Also, one has to become somewhat of a seer. One has to judge a technology on the basis of its survivability in the market place. Not all of the new technologies are going to last, even though they may be technologically sound. If they're not marketed effectively, they may not garner enough market share to be around five or ten years from now, during the period when you're still amortizing that major investment in that technology.



So it is much more than just a question of technological competence on the parts of librarians. At the same time that these new choices are being made, I would argue a librarian has to continue to deal with the old choices--with the older patterns of doing things, because existing collections and patrons with their various kinds of expectations are not all going to go away. One doesn't wipe the slate clean. One overlays one technology - one new set of demands - on top of existing ones. This makes it a very complex problem indeed.

One of the things I'd like to do in trying to address this problem is to get a sense from you which technologies are most familiar to you at this point. I'll identify a few briefly, and then ask for a show of hands to see how many of you feel relatively knowledgeable about each technology. As we run through this list, I'll take three or four of the technologies with which you as a group appear to be least familiar and present some further information. If it turns out that you are equally familiar with all of them, we'll change gears and figure out another way of approaching it. Is that an acceptable approach? Okay.

How many of you feel relatively comfortable with the bibliographic utilities, that is, OCLC, RLG, UTLAS, WLN - the bibliographic utilities that provide shared support services, presently for cataloging and gradually expanding into other areas of library activity? Most of you appear to feel very comfortable with that option. Second, how many of you feel fairly knowledgeable about the turnkey mini-computer systems-CLSI, Data Phase, GLAC, Cincinnati Electronics, Systems Control, Plessey--those companies that take a mini-computer, develop a software package and bundle it up with the installation and the maintenance, etc. as part of one contract price.

How many of you are fairly knowledgeable about those?

Don't worry about the fact that you're not, because one of the points I hope to make later is that you really shouldn't be and can't be knowledgeable about all of these technologies, that you can't be both a technology expert and a library expert at the same time. There are methods of bridging different knowledges within our society. We have gotten past the point where anyone can be completely knowledgeable about everything that affects him or her.

Just as a tangent, let me mention, when I first went to work in a college library, one of the things that struck me was, as I was shelving books in the library, that when it came to books about the Peloponnesian War, there were only two shelves of it and it seemed possible to become an expert on the subject. When I was shelving books about the First World War, there were several hundred of them; but still it seemed to be within one's grasp to become expert. Then, shelving books about the Second World War, there were over ten thousand of them, and it was quite obvious that nobody would ever become an expert in the Second World War in the sense of being able to say "I have read all the research that has been done on this topic." Of course there's also a difference in just having read everything and being able to synthesize it.

The point is that the knowledge base that exists in technology in



information storage, retrieval, and dissemination is so vast that even people who parade themselves as specialists in the field of information technologies such as those of us in our firm, find that we only know a tiny section of technology and have to rely on one another in order to be able to round out the total picture. So when I offer to fill you in on those various technologies, I assure you it will be on a somewhat superficial level, because I don't know enough about all of them.

How many of you feel fairly knowledgeable about the idea of main-frame computer systems, the large IBM-type computer systems? How many of you are familiar with the potential of videodisc technology? Computer output microfiche? That's something available now. How about Viewdata? How many of you have heard of Viewdata - also known as Prestel. Let's take each of these in turn to some extent, and let me just sketch quickly what some of these may bode for libraries in the future.

You're acquainted with OCLC more than any of the things that I've mentioned. It's probably the most visible or the most widely used of the various information technologies. There are now some 1800 participating libraries. You may say, why should OCLC be of interest to a military library? The 1800 libraries in OCLC represent only about 2% special libraries such as military libraries, corporate libraries, or research institute libraries. The interesting thing is that fully 60% of all the OCLC libraries are libraries that process less than 4,000 items per year, so many of them are sized smaller than many of your libraries in terms of the number of items processed, and these are libraries that are effectively using OCLC with as few as five hundred items processed per year; often they do that by sharing a terminal. A terminal will cost a library some \$3,700.00. This shared cataloging system has advantages in these respects; in addition to the cataloging information that comes from the Library of Congress (the MARC tapes), it also has the cataloging information that comes from the various participants; and to the extent that participants that have common needs are cataloging, they begin to find one another's cataloging in that data base. When a number of music libraries began to participate in OCLC, they began to find one another's music cataloging in the data base which they could then call up and modify to suit their local requirements. They substantially cut their cataloging costs. The shared cataloging approach of OCLC and the three other major utilities in North America have now become generally accepted. Each of these utilities is now, however, looking beyond shared cataloging to such things as interlibrary loan. OCLC is the first to have a successful interlibrary loan module where you can call up a particular bibliographic record and can see the interlibrary loan codes displayed for the holding libraries. One can make five selections and the system will electronically communicate with the first library and indicate your desire to borrow that item on interlibrary loan. If the answer is no, we don't lend this item, or it's not currently available, or whatever, the system "defaults" to the next library and then to the next up to five libraries.

The UTLAS bibliographic utility, which is based in Toronto has been the leader in computer output microfiche for those who want to have



the catalog in microform. This may be advantageous from any of several standpoints, but most advantageous economically for those who have to have several different copies of the catalog in different locations. Once the master is made, copies can be very inexpensively made. UTLAS provides that service for several dozen libraries in Canada; primarily, for academic libraries of various sizes but the concept is applicable to any size or type of library; in fact, there are commercial services - Science Press, Baker and Taylor, Blackwell of North America and several others that provide this service to libraries.

The bibliographic utilities are moving into the area of acquisitions. Again, that can be accomplished through that same terminal in the library, so once one calls up a record for the purpose of ordering and uses it, the same record can be used throughout the process of cataloging and subsequently for interlibrary loan. The OCLC bibliographic utility and the UTLAS utility are both beginning to develop what are called front-end systems, a small minicomputer in a library or in a small group of libraries, which is then electronically connected back to the large computer system in the headquarters of the bibliographic utility, and one can enter one's records for a wide variety of purposes, including circulation and even an on-line catalog. One may opt to use very brief bibliographic records so that there will be only two or three lines of information about each item in the local computer which one can then access on a computer terminal by author, by title, by call number or by subject, and get a display of that brief record. For that rare patron who wants all of the bibliographic information, that can be done by so indicating and retrieving the full bibliographic record that is shared among the many libraries in that bibliographic utility's large main-frame computer.

This particular kind of service is attractive from the standpoint of offering a large data base in which machine-stored bibliographic information, whether books or journals or technical reports, is being held and it is ready for repeated uses. So each library doesn't have to generate that from scratch and incur the fairly high intellectual cost of local cataloging. One can use clerical personnel to pull out or adapt that cataloging. It's also attractive in that it requires only a very small capital investment. With an investment in a \$3,700.00 terminal one has access to a multi-million dollar computer system and data base. One pays for the use of that computer system each time one does cataloging on the system or pulls off information. In the case of OCLC one will pay about \$1.20 in order to have access to the cataloging data base and then pays about 4 cents per card for the cards produced. But if one compares that with the in-house cost of doing original cataloging or of going to various printed bibliographies and taking the information out and producing catalog cards, it is an extremely cost-effective approach. Bibliographic utilities are a well established technological alternative for libraries which are moving beyond the cataloging service to a wide range of other services because many other subsystems are under development.

At the same time that this is happening, there have been small minicomputer systems marketed which have circulation software systems in them. If one were to go out and buy a minicomputer just for a



circulation system, along with the discs for information to be stored, and the terminals, one would probably make an investment of something on the order of \$100,000 even for the smallest of libraries. Then one would have to develop all the instructions for the computer-- the software -- to get the computer to perform the kinds of functions one has in mind. That would probably cost one anywhere from \$100,000 to as much as \$400,000 initially, depending upon the kind of staff one had available, the degree of sophistication of the software, etc. Beginning in 1971, a company decided, "Why don't we do this as a general system development and try to provide enough options so that any one of a number of libraries can use the same circulation system. In this way we could divide the cost of the development of the software (which according to a Rand Corporation study represents usually from 50 to 80% of the cost of putting a computer system together) among a number of libraries?" The concept worked because it has the advantage of a library making a one-time capital investment and having the hardware, controlling it, and incurring no communications costs. One of the disadvantages of the bibliographic utilities is that one has to use long distance telephone lines in order to get to the bibliographic utility's large computer. That costs money. Unfortunately, telecommunications is a highly-regulated industry. The Federal Communication Act of 1934 precludes someone coming in and developing a very low-cost data transmission alternative and pricing it very low. By way of a tangent, one local D.C. area businessman has found that by arranging licenses with sixty FM broadcast stations around the country and underlaying the FM broadcast signal with data transmission, transmitting from one FM station to another across the country, it is possible to transmit the equivalent of a full page of text across the country for less than fifteen cents, and make a profit doing it. It wasn't long before AT&T and others decided that the Federal Communications Act of 1934 required revisions and that is exactly what began to happen. However, on the other side was the computer industry represented by such companies as IBM and others who said that they were interested in telecommunications too because they see a forthcoming marriage between computing and communications. Tony Ottinger at the Harvard Institute of Information Policy Research has coined a new phrase, "compunication" to describe the merger of these two technologies. Of course, soon all of these people began descending on Congress and said, "Sure, go ahead and rewrite the Federal Communications Act of 1934 and this is how we think you ought to do it." The result was a stalemate and nothing has happened with the Federal Communications Act of 1934, but the developer of the concept of transmitting data using FM radio stations sold out. This is just a little scenario to illustrate that it's not just a matter of technology; there are also such considerations as politics, legal constraints that affect how well a particular technology can function, etc. The utilities are trying to get around communications costs by developing data concentrators which in various places around the country gather data, concentrate that data, and push it at very, very high speeds through dedicated telephone lines in order to lessen the amount of time spent in long distance data transmission. The turn-key systems, of course, escape all of that.

The real question, however, is how one builds the data base? How does one get into the minicomputer system the information that is



lodged in those various bibliographic utilities? That's one of the nuts that has to be cracked. The other nut which is very rapidly being cracked is getting enough capacity at low enough cost in minicomputers. Minicomputers have gotten more and more powerful so the vendors are finding that while it's easy to sell circulation systems on minicomputers, it's even easier to sell somebody who already has a minicomputer with a circulation system on an expansion of that system by augmenting it with acquisitions and various other kinds of software packages. There are eight companies in this field and they all have some degree of development completed of these additional packages, but they're still trying to tackle the data base development question. One way, of course, is to electronically link the minicomputer to the bibliographic utility, but then one raises the question of on what basis the bibliographic utility will let its data base go and one has the question of communications cost. Here's where another technology may come in - the videodisc. The videodisc is very similar to the phonograph record. Once one has made the master phono disc one can put it in a stamper and stamp out phono discs at fantastic speeds and at very low cost. The videodisc is a way of taking visual images, putting them on a master disc, and making copies of it with an investment of 41 cents in plastic and a total cost of \$1.50 per disc, assuming one does at least 2,000 of them. Each side of the videodisc has 54,000 still images on it, and one can put 108,000 images on the two sides. The industry is promoting the videodisc as an entertainment medium, but the original developer of the videodisc, Philips of the Netherlands, got the idea that the greatest potential of the videodisc is not as a device for storing visual images, but as a medium for storing digitized information. One takes the same videodisc mastering concept, making all of those copies very fast and very economically, and places digitized information on the discs. One could take the entire 600 plus volumes of the National Union Catalog and put it on one disc. Once one has created that master disc, one can stamp those things out by the thousands. One can literally send every library in this country a complete National Union Catalog updated monthly for \$10.00 a month if one could get at least 10,000 to subscribe. Now there are certain obstacles, of course. The obstacles include whether those who hold the rights to the information allow a lot of that information to be reformatted and used and distributed in this way. There is already an example of this kind of distribution technique in the form of a product from a company in this area, Informatics. The company takes the Library of Congress' MARC tapes and puts them on floppy discs. It's called MINIMARC. One can then put the floppy discs on a very small minicomputer or microcomputer and use it to do inhouse cataloging. The problem with MINIMARC, however, is that it's a small data base. If one goes to OCLC, one will find that only 25% of all the cataloging information is contributed through LC MARC tapes. With MINIMARC, one cuts out the cost of the telecommunications but the problem is that one gets only one-fourth as much bibliographic information. One may miss the cataloging for technical reports and other highly specialized materials that one's library may be trying hardest to get out of the backlogs. But extend the MINIMARC concept to some-one getting agreements with a few key libraries of highly specialized types or of very large sizes to put together a very comprehensive data base. Then, instead of doing it on floppy discs, which have serious limitations, do it on videodiscs which can be loaded on to a



minicomputer system in a library. The organization that has done the most intensive exploration of this is the Lister Hill Laboratory for Biomedical Communication at the National Library of Medicine, but there will be more soon.

One of the factors that limits or slows the diffusion rate of technology is attitude. If one talks with one of the vice presidents of a company like MCA, which now makes most of the videodiscs produced in this country, or to the vice president of Philips-North America, which actually manufactures players and which holds the patents on the disc itself, they're not interested in the library and educational markets. There's too little money in those markets; they're too finicky, they demand too much. They're after the entertainment market. One is not going to see a rapid development of the videodisc for the kinds of applications that librarians might be interested in until there's been enough work done by librarians to demonstrate the potential to those who control the technology at this time. Videodisc represents a technology in which one can gather vast quantities of information that potentially many users will seek and can reproduce it and disseminate it very inexpensively for use on local computer systems, and without the telecommunications costs that I've mentioned.

Yet another approach that has been developed to a very substantial extent in Great Britain, although there are also developments in Canada, France, Germany and several other countries as well, is the British Viewdata or Prestel system. Basically what one does is modify a television set so that it has access to regular local telephone lines at the other end of which are computers. One then uses a computer to retrieve information through the telephone lines for display on the television receiver. Any one of a quarter of a million people in Britain now can go to their TV sets, turn to a certain channel and access the system. The system gives a range of options and the user presses the numbered selection on a little touch-tone device that constitutes the modification to the TV that I mentioned.

The travel agency or other business which supplies the information that goes into the computerized data base gets a commission for all the activity as well as any business fee. The company that has the computer system and the communications linkage with the phone company gets a commission and the telephone company gets a commission. Added together, however, for each page of information that one calls up on the TV screen, it costs 4 to 6 cents.

OCLC, the bibliographic utility I mentioned earlier, is one of the principal organizations that is actively researching and developing Viewdata for use in the U.S. One of the things they're working on is putting library catalogs and reference books on-line so that an individual in his or her home can use a TV set in order to get to reference sources. The experiment is intended to work out a sophisticated system that will link that person not just to printed sources, but also to libraries. One of the things that is becoming increasingly true is that information requires validation and evaluation. There's nothing more frustrating to the average person than doing searching on Lockheed, SDC or BRS and getting a mass of information on the topic, including information not only from his or her own discipline but also



information from other lesser known disciplines. One of the great discoveries of using this kind of electronic bibliographic searching is to find that there are people in disciplines totally unrelated to your discipline that have done work pertinent to your work. One may say at first that that's useful, but when one examines it, one may find that it's written from an entirely different perspective. As technology makes it possible for us to search very rapidly vast quantities of data produced by people in all sorts of disciplines, it's going to link together all sorts of information that appears inconsistent. There will be a need for intermediaries. The librarians can help validate and evaluate. That's why the role of the librarian in the technological era is going to become a more consequential one than ever before.

This is one of the things that OCLC has in mind in saying, "Let a library organization take a leading role in the development of a technology that's going to deliver information to the home." Rather than having it developed commercially and being delivered to the home and the library not inserting itself at all, the library's role in this whole process is planned. One of the things the user gets told is if he/she needs more information on the topic, the nearest library will be able to help. One may actually be able to use that same system to call upon the local library.

The likelihood that people will go to a library in the future is less than today. It's hard enough to get them to go to a library today, as you know, whether a military library, academic library or public library. Let's face it - if all of the people who are potential users made it into a library regularly, we wouldn't have enough seats and we would be absolutely overwhelmed. The point is that the vast majority of them manage to do just fine without ever coming into a library at all. That being the case, when they start having this kind of technology delivered to their home with information, what can one do to make sure that the library is insinuated into the process at the right time? Viewdata is so important because it builds on two technologies that virtually everyone has in his or her home already - the television set and the telephone. Even though technologically it's not the best, or the most sophisticated, or the cheapest, it should do well. It doesn't have to be those things, if it is the easiest to access.

Yet another technology is that of high-density micrographics with computer access. There is a company in Berkeley, California, called Teknekron which has recently completed contracts for the Nuclear Regulatory Commission and for the Congressional Research Service and is bidding on a number of other Federal Agency contracts, including a DoD contract, to provide large mass storage systems for the records of those agencies. The Nuclear Regulatory Commission said, "We have a lot of data which is taking up a lot of space. We want to be able to store it more compactly; second, we want to be able to organize it or index it more reliably; third, we want to have greater file integrity than we have now; and fourth, we want people to be able to get at it from remote locations very quickly without having to go through cumbersome ordering and copying and mailing procedures; and fifth, we want to be able to put high quality hard copy in people's



hands very, very quickly. What can you do for us?" Teknekron is a highly sophisticated design company and they came up with an answer. It's a series of carousels; like the Kodak carousel on a slide projector, only they're larger and instead of having slides, they have microfiche, 4x6 inch 48 x reduction. There are ten of these carousels stacked on top of one another, each filled with file. The microfiche are packed; that is, every frame is filled. Almost all microfiche begins with microfilm. One strips it off on a masterfiche, makes the fiche copies, then loads the fiche in the carousels. The reason why they pack it is to get the ultimate density so a hundred million pages can be placed in something a little taller than this lectern. There is a device which will go into the carousel to retrieve a file when told to do so by a computer. The computer is a minicomputer which has the index to what's in the system and where it's located. The system pulls the fiche out and it makes a copy of that whole fiche and puts the fiche back right away so the integrity of the file is always maintained. The copy is transmitted on a very high resolution screen to the user, who can be in the next room or can be a thousand miles away. The system marries the technologies of computing, telecommunications and micrographics. It is not an extraordinarily expensive system, when you consider that for the first ten million pages of storage, the total system - hardware, software and everything, is about a quarter of a million dollars. Had Three Mile Island occurred a little later, they would have hauled a portable terminal to Three Mile Island and would have been able to access the entire data base of the Nuclear Regulatory Commission right there on-site. Instead, they had to spend their time on the telephone, getting copies of various reports flown out to Three Mile Island in order to keep people there on-site informed, as they tried to analyze what had happened.

Developments are occurring on many fronts simultaneously. Rather than going through the rest of the list, I merely want to point out that there is a smorgasbord of options. The answer is not for you to become an expert on each one of these alternatives, because if you seek to do that, I assure you, you'll cease to be a librarian. The study of information technology is a discipline as varied and complex as librarianship itself. What one can do is to become a little bit knowledgeable about the whole range of options from the standpoint of what are the capabilities and what are the limitations and the future viability of each technology?

I already expressed a bias to you earlier about Viewdata, not because I think it's the best technology, but because I think that it is one of the ones that has potential staying power. Other technologies about which I would be enthusiastic would be those that had commitment and an awful lot of financial resources behind them. Now, I stress commitment and financial resources both. One can have strong commitment from people that haven't got very much money and one can have a lot of money from people who don't have much commitment, and sooner or later someone will pull the rug out from under the program, if one of the two elements is missing. Assessing these kinds of ingredients does not take a high level of technological skill. It means talking to an awful lot of people and saying, "Hey, what's the



likelihood that this particular medium is going to survive? Is this particular technology going to go? Who seems to be behind it? Who's using it?" One of the things that would be important news for me, for example, would be that videodisc was recently acquired by GM as the means for doing demonstrations in dealer showrooms and for training sales people. They ordered 7,000 videodisc players. That represents something like four months of the U.S. production of videodisc players. They also placed a \$13 million production order for videodiscs with MCA, which takes care of eight of the next twelve months of production capacity. When somebody like GM makes that kind of commitment to a new technology, the ripple effect of the decision is going to be very, very significant indeed. It does a great deal to assure the survivability of that particular medium in the market place.

Maintaining an overview of the technologies rather than becoming a specialist in a technology seems to me to be the wiser approach for the librarian. Look at the alternative technologies available and decide on two or three technologies which appear to be the most appropriate; then bring in experts in those particular technologies to advise one in making a decision. One of the things I get involved in in my consulting capacity is dealing with people who have been told, "That can't be done." That's just a variation of an older phrase, "We've never done it that way before" or it's a variation of "We don't particularly want to do that." There are very few things that are impossible technologically. Almost anything can be done with the available technologies. One may not want to do it for economic reasons or someone may not want to do it because it is not comfortable. Don't ever let anyone tell you that something cannot be done.

The question really is one of knowing the functional capabilities of the various technologies and what are the functional limitations of those particular technologies. Limitations may be functional limitations or they may be economical. One can use a large main-frame computer to run a circulation system in a small base library but it would be a tremendous waste of money in special software development. One could use a small minicomputer in a small base library but it may mean a large capital investment, and one may not have the capital. You can use a bibliographic utility for the circulation system, but it means a monthly outlay from the operating budget. The options come with their advantages and disadvantages, and knowing those I think is really the key.

The number of technologies will continue to proliferate - some will die - not necessarily because they have become technologically obsolete - and others will emerge. Have a clear sense of one's own requirements, so that one can match the requirements against the alleged functional capabilities and limitations of the various options.

Talk to others. There are special librarians that have solved problems that public libraries are now encountering, who in turn have solved problems that academic libraries are now encountering. One of the major ways in which consultants make their living is by transferring information from one sector of the compartmentalized library community to another sector of the compartmentalized library community, and to the extent one can break out of those compartments and



get into the other compartments, it will be very useful. Break out of going to the Special Library Association meeting and go to a meeting of a completely different type -- whether it's the National Computer Conference or the American Society for Information Science, the Medical Library Association, or the Law Library Association. It's very interesting how different the view of the same technology is from field to field. Librarians just don't talk enough among one another in the broadest sense.

## DATA PROCESSOR

Lee Powers  
Federal Library Committee

Before I get into some of the activities of the Federal Library Committee, I want to talk about the future of the library. Part of what I do at the Federal Library Committee is to advise Federal librarians on automation programs. Everyday I receive calls about a new program and, by the turn of the century, I can imagine the type of call I might receive. For example, "This is Harry Blakely, with the Department of Exterior. We are preparing our budget for the year 2001 and we want to include certain provisions for improving our library program. As you know, we have a main library at base station Alpha, and bases on each of the other five space stations. There is a small library on the Venus Station, two in the vicinity of the moon, and one each near Mars and Jupiter. What I want to talk to you about is our plans for a new inter-library loan network. What we have in mind is fitting each of the space stations with a pneumatic cannon. To send a book from Mars to Venus, the book would be placed in a cannon, aimed at the Venus station, and a blast of carbon dioxide would launch the book into space. Since there is no gravity and no atmosphere to contend with, we can transmit books at speeds of about 100,000 miles per hour. Even at these speeds, it will take a couple of weeks in transit and, by that time, the Venus Station will have moved. We would like an estimate of the cost of developing a computer program to calculate the relative trajectory of any two space stations, calculate the optimum launch window, aim the cannon and launch the books automatically."

By the year 2000, we may have some orbiting space stations, and, no doubt, they will have libraries. Most of us, however, will still be earth-bound and very much concerned with today's problems. I would like to consider some of the changes that we can expect in the next decade between now and the 1990s. I have some predictions about these changes. Information networks, as we know them, will be obsolete in five to ten years. Libraries will offer readers their choice of retrieval languages; each of which may be used to access all of the data bases. On-line access to stored images, maps, still and motion pictures, etc., will be common by 1990. Some books will be published originally in disc editions. Before I return to these predictions, I will relate some background about the nature of technological developments in relation to libraries which lead to those predictions.

Often we feel that technology is tugging us in one direction or another. Technology has a way of popping up unexpectedly, of becoming obsolete before we can adapt to it, and of never living up to our expectations. As an example, let us consider the ball point pen. The book on library buildings and furnishings, written 33 years ago in 1946, cautioned library planners to include ink wells for their readers. Within ten years, the ball point made ink wells obsolete. Twelve years ago at the ALA Buildings Institute, speakers talked about



isolating noisy paper-tape machines. Within five years, much quieter on-line terminals had replaced most of these machines. To be consistent with my premise, I submit to you that the apparent fickle nature of technological development is nothing more than a trial and error evolution of technology. Each trial is targeted to solve some problem. If it fails, it is because our society did not accept it. Thus, we are the ultimate judge and jury.

To illustrate that technology is responsive to our needs, we have only to look at the evolution of the computer. When we accepted the idea of computer technology as a means of improving library services some 15 or 20 years ago, computers were large, very expensive and generated intolerable heat. Computers needed special rooms with heavy air-conditioning. Despite these undesirable characteristics, we readily imagined computers in every library. At the time, we accepted the technology for what it was and began redesigning library architecture to accommodate these oversized machines with their tinted heat and bundles of cables. It has not happened this way, and we do not have computers in every library. Relatively few libraries were in a position to build computer rooms or an entire new building just to accommodate a computer. The message given to the technologists was that libraries were willing to use computers on a large scale, but only if they were affordable and could be used in existing buildings. The response has been twofold: networks have seen tremendous growth in recent years because telecommunications technology made it possible to use a computer without installing it locally. Instead of building a computer room, libraries have installed terminals connected to computers hundreds of miles away. The other reason is the development of smaller and smaller computers. One used to be able to walk around inside a computer; whereas, today computers are small enough to hold in your lap and have more processing power than their oversized predecessors. With the advent of on-line terminals, we ran into problems stringing the telecommunications cables. The wiring channels in older buildings were not large enough to accommodate the bundles of cables. Today we are concerned about assuring that there will be adequate telecommunications facilities in new buildings. In a few years, however, technology will have responded to the problem with the introduction of fiber optics in laser beams. A pair of hair-size fiber optic wires will be able to carry over 600 simultaneous telephone conversations.

Many technologies have come and gone largely unnoticed because people did not accept them. The mere fact that technology exists does not mean that it will automatically impact our future. The technology exists to build automobiles that travel in excess of 200 mph, but our society has set a 55 mph speed limit. The technology exists for nuclear energy to replace fossil fuel energy, but our society is insisting upon much better safety provisions before allowing it to happen. The successful technologies are those which meet three tests. Technology must be responsive to a perceived need, must be compatible with our social and physical environments and priced within a range that people are willing to pay. All three of these tests must be satisfied by at least some segment of our society for the technology to be successful. An apparently successful technology can ultimately



fail due to societal changes in any of the three conditions. For instance, the Model T Ford was a successful technology when it was introduced, but a few years later the public expectations of automobiles changed and the Model T was replaced with the Model A. In other words, the social environment changed.

Since the advent of library and information service networking (which is our Model T), the public expectations of networking have changed. In recent years, the libraries and information community have been wrestling with the notion of widespread public access to information resources. The ideal is on-line immediate access at the user's convenience at home, at the office, and at the library. However overwhelming it may seem, considering today's technology, the notion of such convenient access to information is in keeping with the trend toward a more service-oriented society. This is more important than whether or not we think it can be done. It does not matter whether or not there are ongoing R&D projects addressing the subject or whether we can point to an emerging technology that will satisfy the expectations. If there is sufficient interest, someone will devise the necessary technology.

I said earlier that the predictions were all a consequence of some social expectation. Given that our society expects access to information in the context of personal rights and equal opportunity, our libraries are expected to follow suit. The first prediction was that libraries and information service networks, as we know them today, will be obsolete within 5 to 10 years. Based on the three point test, the prior networking technology: (a) cannot meet the perceived need of the general public access, (b) it is not compatible with the social environment for social services, (c) it is not priced within the range that the general public is willing to pay. The conclusion, therefore, is that the current technology will become obsolete.

Today's on-line information retrieval systems can handle about 2,000-5,000 information searches per day, per computer. If only 5% of the population conducted an information search each day, there would be about 10 million searches a day. Using current technology, there would have to be 2,000-5,000 large computers providing information retrieval services. This would constitute about 10 times as much as we have now. Even if we had 100 times as many computers, the cost of operating these systems would still require service charges greater than what a family could afford. Additionally, most of the on-line information retrieval services are presumed to require the assistance of specially-trained information specialists. Although the typical boolean logic information search takes about 15-20 minutes on line, the information specialists used to conduct searches takes an additional 40 minutes divided between the pre-search strategy building and post-search debriefing. Consequently, the information specialist is occupied an average of 60 minutes per search. Therefore, if the library staff were to assist the public on all searches, we would need an estimated 1,700,000 specialists working 6 hours a day to achieve a reasonable level of public access. Nevertheless, the idea of public access to information will not go away just because we have not discovered the technological solution.



Today's information service networks predominantly use a star structure where messages flow between a single service center and multiple terminals. Each network (a network being an organization) provides the data bases certain processes, such as shared cataloging, information retrieval and inter-library loans. The network also provides the rules for human machine dialogue and, in some instances, the terminals themselves. Each network is a monolithic structure and users must take them as a whole. When a user wants to access a vendor's data base, the user must acquire an appropriate terminal and learn the vendor's rules for the man-machine dialogue. If the user wants to access the data base of several vendors, he must learn the dialogue rule for each of them and may have to acquire several terminals. Further, the user has no choice about how to use the data base. If the vendor offers only shared cataloging, the user cannot use that data base for information retrieval.

Users generally choose among the various information service networks based on the processes offered and the data bases. In other words, there is competition among information retrieval networks and competition among shared cataloging networks. The decisions are made on which network supplies the data bases which are needed. Seldom does a user subscribe to a service because of the man-machine dialogue procedures. For instance, you don't buy the New York Times because you like their retrieval lines; you buy the New York Times because of the data in it. A user may prefer one network's language, another's data base and a third one's processes, but the monolithic structure does not permit such choices.

Another problem with the monolithic structure is that with such concentration of resources where a new network would have to develop all of the components, the market entry costs are prohibitive. To start a new competitive network would cost millions of dollars and years of systems development time, as much as 2 to 5 years, to reach a truly competitive state. After California's Proposition 13, the probability of major funding from tax dollars is quite small. If we are to obtain the goal of general public access to information service networks, there will have to be many new service suppliers. To get new suppliers, the market entry cost will have to be much less than it is today. The cost to the consumer will have to be much less and there will have to be substantial funding sources other than from libraries and tax dollars. As I said earlier, I cannot tell you how it will happen. I only know that the problem of having to learn several different languages and having to buy several terminals has been brewing for several years. Where there is a need, someone will find a way.

Before proposing a hypothetical solution, there is another ingredient in general public access that must be addressed. This ingredient is the prospect of terminals in homes and offices. Will there or will there not be computer terminals in most homes? I believe this will eventually happen. There are some people who look for the personal computer in every home. Others would argue that personal computers will not be widespread in homes because people are intimidated by them and the general public would not take the time to learn how to



use one. I would agree with those who say that personal computers will be limited to the computer professionals and the hobbyist. Millions of people pass by a radio shack every day and see something that looks like their home television set with a key board. Advertised as a personal computer, its presence must have an effect on public attitudes. Not every home has a sophisticated high fidelity stereo system; however, millions of homes have some device which will play stereo records and tapes. The point is, if someone devises an information appliance within the range of what people are willing to pay and it does not require a significant learning process, people will buy it, particularly if it means access to information they want.

The excessive charges for on-line searching may be obviated in some new services which use local telephone connections, and offer data bases, such as classified advertising and sales at local stores where the costs are, in fact, subsidized by data base suppliers. It is the same principle as advertising in newspapers and magazines where the advertising dollars help reduce the costs to the subscribers. We have one such system in this area called the Source. Instead of paying \$16-\$200 per hour with the Source, you pay \$2.75 per hour, which represents a tremendous drop in price for information retrieval services. By this time, you may think I have lost touch with reality, but there is a company in McLean, VA, the Source, advertising information processing services at \$2.75 an hour. With this service, one can write programs, balance a checkbook, figure income taxes, check on theatre tickets and news items. This is another entry into the home marketplace for computerized information services, along with new data, cable TV and computer games. Private enterprise is likely to have information and entertainment services into homes long before libraries are ready to participate.

In the last couple of years, there has been an influx in microprocessors. There are some small computers that you can hide in the palm of your hand. These microprocessors appear in calculators, in word processing equipment, in minicomputers, automobiles and wrist watches. A company might build a terminal based on a microprocessor pre-programmed for information retrieval. There might be several such manufacturers. The rules of the man-machine dialogue would be built into the terminal, not the central computer, and, therefore, independent of the data supplier. One could buy a terminal according to the type of retrieval dialogue you prefer. One version might be to touch a screen or menu which would present a list of options on a display screen and, then, touch the option you want.

Another version might be a boolean logic language similar to Lockheed dialogue. Each terminal could contain the information processing capabilities within it and the only missing ingredient would be the data. Eventually, such terminals will connect to a network of information resource suppliers, such as Lockheed, SDC, BRS, OCLC, Library of Congress, Environmental Protection Agency, the local bus company and the local library systems. The network structure would be a ring structure with all of the information resource suppliers connected to a gigantic telecommunications loop. Each supplier would supply data



only, not the very expensive information retrieval processes. Since the amount of computer activity at each of the data suppliers would be reduced by transmitting data records, each computer could handle many more searches per day. The main central computer site, such as the one at Lockheed, is not doing boolean logic. This is being done in the terminal in your office. Without having to conduct the boolean logic combinations and storing intermediate search results for each active user, the data supplier's can, theoretically, handle ten times as many searches per day.

In this idyllic world of the future, the information consumer would still choose the vendor for the data resources as one does now, but each consumer would have an independent choice of the processes in the man-machine dialogue procedures. One might buy a certain type with the dialogue language and use it to access OCLC data base or the local bus schedule. Private enterprise, particularly terminal manufacturers, would compete for the market by continually improving the user cordiality of the man-machine dialogue and improving the processing features of their terminals. I expect the emergence of such networks within the next five to ten years. When this happens, there will be an explosion of new information services. Libraries will be able to put their data bases on-line at comparatively less cost. This refers to the fact that they would be supplying only the data. You can have a relatively simple software system to provide the access to data without all of the boolean logic, but simply to transmit records out. Instead of paying hundreds of thousands or millions of dollars to set up a new system, you could do it for one-tenth of the cost.

Now I would like to speak a little bit about video discs. The word is out on video discs. Nothing like it has stimulated the imagination of the information community since the advent of direct access mass storage on the computers. I would like to reiterate the salient points of video discs for those who might not have heard. The video disc is a disc about the same diameter and thickness as an LP record. They come with 76,000 microscopic grooves. Unlike a phonograph record, which actually has a single groove spiralling into the center, the video disc has 76,000 concentric circles. Each groove equals one TV picture frame. If the read head remains positioned at one groove, the effect is continuously repeating the same picture 30 times per second, giving a still picture or freeze frame. To show motion pictures, the read head moves from groove to groove at a normal rate of 30 grooves per second. This is what happens when watching a pre-recorded movie on a video disc. With continuous play, one side lasts about 30 minutes. Inside the video disc playback unit is a programmable microprocessor. The user can enter commands which tell the read head to read each groove once and step to the next groove. This would be the normal motion picture. The user might also give instructions to the microprocessor to read each groove two or three times before stepping to the next groove and the effect would be slow motion. Additionally, each groove is numbered and there is an instruction to the microprocessor to tell it which groove the user wants. Coupling that instruction with others, the device may be instructed to start at groove 1,000 and read consecutively to groove 2,000. Since the microprocessor is only following instructions and the user instructs it to



read groove 2,000, then groove 1,999, etc., the effect is the same as running a movie backwards. If there were an index to the scenes in a movie or news items on a newscast giving the beginning and ending groove numbers, the device could be instructed to skip directly to the desired part and selectively play it.

There is another intriguing feature of the video disc. Each video frame is actually composed of miniscule pits etched into the bottom of the groove by a laser. If each of those pits were used to record a bit of digital information, which computers could understand, there would be enough pits on the bottom of the disc to record the Library of Congress mark taper - all one million, plus bibliographic citations. There is one thing about the video disc. They are essentially permanent storage. They are good for mass reproduction where thousands are stamped out from a master copy. In mass reproduction, they are relatively inexpensive - about the same price as an LP record. They are not good for storing data that is constantly changing. There is another type of video disc that uses a magnetic recording similar to the instant replay device which may be suitable for changing data.

What does this mean for Federal libraries, the Federal Library Committee and for Military Special Libraries ten years hence? I think for the Federal Library Committees there are some agenda items. The business about the cost of getting new services into the marketplace suggests that the Federal community and the Federal Library Committee needs to do things to promote private risk capital and research and development. Encouraging RCA, MCA and the other video disc manufacturers to get into the information processing marketplace is something that we should look toward. I'm not talking about NSF Grants or contributions from the Federal agencies to build an R&D program to test these things. I think what we need to do is work toward an environment where it is healthy for private industry to get into this kind of competitive market. Let me cite some examples. When the Federal Library Committee became involved with the OCLC people, the only type of connection you could make was on the least line and use the OCLC prescribed terminal. One of the things we did was to persuade them to make a connection to Time Share to use a dialogue terminal of your choice. This is one small example of a policy issue whereby we can open up the marketplace and the competition. There are certain parameters in which you use dialogue terminals, such as those libraries with a lesser amount of use. The high volume users are still using the OCLC prescribed terminals on least lines. From a policy standpoint, I don't know that it is absolutely necessary. I would rather be able to go to ten different companies and buy my choice of terminals. This may be cheaper or may have internal processing capabilities, but I would rather have my choice and set up a competitive environment so private industry would do its own R&D, invest its own money in competing for this marketplace.

I think we are getting to the point now in library information services where we are being recognized by the private sector as a marketplace. As little as five, six or seven years ago, libraries were not a big enough marketplace for computer terminal manufacturers to really pay much attention to them. Ten years ago it was almost impossible to



get a terminal with upper and lower case carriages, whereas, today it is commonplace. I won't claim that librarians were the motivating force for getting upper and lower case, but it sure helped us and I'm sure we had some input into that process.

On the way in this morning, I was thinking about librarians as they are affected by the changing mode of recording information. I thought about the stone age when all recorded knowledge was carved into stone. I tried to imagine a library in the stone age where you would borrow a block. We don't hear too much about libraries in the stone age and I wonder if it's because the librarians couldn't settle on a standard three by five hole in the bottom of the stone for catalogues. Beyond the stone age, however, we saw the first animal skin for recording information and later vegetable base papers, such as, papyrus, rice paper and wood pulp which we use today. We got into binding first with hand scribed materials and then with printing. The libraries we think of today are mostly oriented around the printed, mass produced, bound paper books. The special libraries have been a little more progressive in going into the next generation with microfilm, magnetic recordings, magnetic tapes, and records, which are now showing up in libraries. Certain changes come about with the type of recorded matter. In another ten years, the video disc will be used for issuing journals, weekly magazines and long lasting reference materials. Video discs might be a very good medium for encyclopedias, dictionaries and other reference materials which are not changed frequently. Coupling a video disc of a dictionary with a computer, one could quickly look up words just as easily as you might with a paper book. I'm not about to suggest that within ten years or even 100 years we will have eliminated books. I haven't found the new technology that will allow you to take it with you on the subway and read it on your way to work. I can't imagine carrying a microfiche reader or a video disc in my lap on the subway. We will still have books, documents and libraries that handle them, but libraries will also have to handle these other media. By other media, I mean not only the things we think of ordinarily in terms of microforms, but also a library of computer programs.

Why not be able to search a Federal Library Network? I was thinking about the problem of my first illustration in the inter-space, inter-library loan. They needed a program to calculate the relative positions of the space stations. Wouldn't it be nice if in a situation like that you could go into a network and search it for a program? I'm sure the Redstone Scientific Information Center has somebody down at the Marshall Space Flight Center who has worked out a program to do those relative trajectories. Goddard, Houston, various NASA systems, and several of the military space missiles have done that sort of thing before. Why not be able to go to a local informational retrieval terminal, search it for the computer program that you want and have that program automatically transmitted to your local processor and start using it. What makes it different that this computer program would be in some data processing facility as opposed to the library? I would like you to think about that for a moment. We, normally, don't think about bringing in computer tapes and sticking them on shelves in a library, but why not. For some reason, that computer business has been relegated off to a data processing center someplace. I'm a data processor and have been for a number of years. When you're into



programming and systems analysis, the hardest thing in the world to get those people to do is to write something down. It's almost impossible to get data processing people to describe the program that they just wrote, to put some sort of abstract on it and to document it in a form someone else can understand. These are the people you are trusting with all of those resources. I suggest that is why we have librarians. Authors don't catalogue the book and make it available to everybody and neither does a computer programmer. Ultimately, if we want access to that type of information resource, I think we need some variation of librarians to get involved, to do the cataloging of that material, to put it in a library and handle it as we do books, documents and other information materials.

I would like to talk a little bit about where we are with the Federal Library Committee right now. I have been there for two and one-half years. When I began there, they had two Service Programs, OCLC, BEDLINK and recently signed a contract with BRS for information retrieval. We have come a long way. I did a chart that shows the growth rate in the number of participants in FLC programs. It starts off with about a half dozen in 1973 and we're now running around 250 participants in various services. To bring you up to date, the services that we are offering now include OCLC, BRS information retrieval, Rockwell North American, Lockheed and Meet Data Central Lexis (legal information retrieval). We have a contract with BRS, whereby you can load private files and those files can either be private to you or you can make them available to all the other BRS users. For those of you with OCLC tapes, we have a contract with Rockwell North American to process tapes to produce various types of catalogue products. You can get microform, microfilm, role film, microfiche or printed catalogues if you prefer. If you get your own tapes from OCLC, those can be sent to Rockwell to be processed. You can have Rockwell extract your records off the FLC master tapes. We have two more which are imminent. We received a call the other day, after several years of prodding, from SDC Orbit. They are very anxious to sign a contract with us which we are delighted to do and, I think, the paperwork has already gone forward on it. We are also very close to getting an arrangement with the New York Times. There is another one, the Source, which I had some inquiries about and I have let the people know that we are interested. The thing of particular interest to some of our Federal librarians from the Source is that even during prime time, the rate they have quoted is \$15.00 per hour.

Included in the data bases that they have is the UPI ticker tape which gives the full text of UPI stories. They will store those in the computer until they decide to delete them. They have said they will keep that ticker tape current so you can almost follow news stories as they break. They are also working out an arrangement with the New York Times Info Bank, whereby they will get from New York Times those non-UPI stories. There will be a subset of the New York Times Info Bank Data Base excluding the UPI. With the combination of the UPI full text of stories and the New York Times Subset, you have almost the equivalent of the New York Times Info Bank. We also have inquiries about a third one which has been sitting on my desk because I haven't had time



to work on it, and that is with West Publishing West Mall (again legal information) retrieval.

Let me make this statement because I get questions about this, particularly at the end of the fiscal year. Everyday I get at least one call asking, "What is your authority to do business, why can we sign this, do we save money, what about the 11% and so forth." Let me walk through some of that procedure. The Federal Library Committee has been working with GSA on process of waivers for these services for some time. A couple of years ago, GSA said we're tired of getting all of these waiver requests, one from Lockheed, one from OCLC and one from BRS, etc. They asked why don't you put them all together in one waiver request? We replied we would be glad to do that and get it all over with at once. For last year, we put it in and listed the services that we thought we would have for the year. We had to estimate the total value of all those services which last year was 2.4 billion dollars. It took them quite a while, but they finally signed the waiver back in June for FY 1979. We had actually submitted it in FY 78, but it took a little longer. Now the procedure is smooth because they know we are coming and they told us to get in early so they could get it done. This year we put it in and listed all of the services which I named just a moment ago with the exception of the Source. We had not thought about the Source at the time it was submitted. They have approved that waiver for 3.4 million dollars, and it is a waiver on behalf of Federal libraries and information centers. The idea which GSA is encouraging and, they love this because it means less work for them, is for Federal libraries to come to the Federal Library Committee, skip the waiver business, sign an interagency agreement, join the contract and go. Still a lot of procurement people don't believe that, to be quite honest with you, they are still quite skeptical about the whole process. I keep hearing more and more stories about people who have submitted waiver requests to GSA for Lexis and GSA refers them to the Federal Library Committee. I guess the word is spreading slowly but surely.

We will continue looking for additional services and if you have some services which you are particularly interested in, you should call or write our office. When we know that there are several agencies interested and when we can do a joint contract with the vendor and save ourselves some time and money in processing, we are glad to do it. If we can be of help to any of you in any of those respects, please feel free to call on us.

I would add another note and conclude. In my talk, I was discussing monolithic network systems and I would like for you to be alert to some of them. As you get involved in more and more automation activities with more and more vendors, there seems to be a natural inclination for the vendors to build a monolithic and monopolistic system. It's going to be up to you to think about this when a vendor says you have to use my terminal, and only my terminal, and you can't use my terminal to access any other service. We have something to talk about. For instance, Lexis does that to us; they insist on using a special terminal. I have talked to them about it but not very successfully. I have let them know that we do not like that situation at all. Now they give you a choice of two different terminals. In terms of price,

the newer one, which is a very small desk top thing, is not a terribly expensive device in itself. My problem with that is you can't use it to access anything else and if you also want to access BRS, you have to buy another terminal. This is the thing I'm willing to fight against.



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Mrs. Klinefelter, Mr. DeWald, Ms. Fox, Mr. Miles, Ms. Carey





## PROGRAMS AND PLANS

Mr. Herman W. Miles  
Defense Documentation Center

A belated happy fiscal year to you. Hope you get paid for your TDY trip to D.C. Also hope you receive your salary checks late in October. Yes, money talks, and when the persons who hold the purse strings talk, we listen. Most of you will receive a 7% increase in your salaries late this month, assuming Congress reconvenes and rapidly appropriates monies to continue operation of the Federal Government.

After yesterday's meeting, I returned to the office and found a message from the OSD Comptroller that said there would be no increase in our budget to cover the 7% salary increase. That means only one thing -- we have to increase our productivity and produce more with less. You have heard that song before, and you will hear it again and again and again. Effective management and utilization of resources is a responsibility that you and I cannot escape.

We need to recognize that responsibility and collectively work at achieving that goal. We owe it to ourselves, our employers and the U.S. taxpayer. We consider Congress one of our most important customers; also, the Office of Management and Budget, GSA and GAO. Speaking of GAO, they have recently issued a report titled Better Information Management Policies Needed: A Study of Scientific and Technical Bibliographic Services. Single copies are available free of charge from GAO.

I recommend you read it. (See Figure 1.)

The report states that, "Although the Federal Government spends billions of dollars to create, collect, and disseminate scientific and technical information, it pays little attention to information policies or how information activities are managed." "GAO found evidence of duplication, proliferation of facilities, and inconsistent cost recovery practices." Also that "each department and agency should designate a top official to coordinate and manage its information, and the Office of Management and Budget should establish a committee to coordinate government scientific and technical information activities."

References to DoD are sparse in this report -- could it be that they are an extensive user of DDC? Their audit teams use our Technical Report and Management Data Bases regularly. Could it be that DoD has a designated individual with the title "Assistant for Information Management?" Note DoD did not reinstate the position of Director of Technical Information. Establishing the position of Assistant for Information Management indicates that DoD has already seen the need for the relationship of information management to management of R&D and other program missions. This is also a new direction for DDC and we commend the practice to you as librarians.

Expand your horizons to management of your agency's resources. Also, work with us in the identification of duplication and the proliferation



of facilities. The most sensitive issue in the report is the implications surrounding full cost recovery for bibliographic services. Again, DoD appears in a good light in the report, and I quote, "DoD points out that there must be a concern of the adverse effect on users of requiring full-cost recovery." Also, "When DoD implemented a user charging program for DDC in 1968, the stated purpose in doing so was, in part:

"Free services can invite indiscriminate use since these services may be requested without the economic check of need versus cost."

Going back to my theme of cost, productivity and effective management of resources, I am proud to report that despite a 100% increase in postage and a 45% increase in salaries since implementing the \$3.00 charge for hard copy documents, that our unit costs are declining, productivity almost doubled, and with a few equipment and processing changes, our unit cost will almost equal the unit charge of \$3.00. In fact, one of the good features of our on-line system is document ordering. It saves you, our user, time and money, and DDC time and money. In fact, if we were to recommend a change in document charges, it would be a discount of \$.25 per document for documents ordered on-line.

The one recommendation in the report that we in DDC plan to take seriously is the development of a more precise cost accounting system. This may take several years. We would also recommend that you, if you haven't already done so, develop techniques to not only know the cost for the services you render, but also be able to quantify the value for services rendered.

Economic considerations will be a factor in the providing of new services and changes to existing services. You our customers must have a voice in this process. Marginal utility, relative substitution value and subsidization are terms you should become familiar with -- NOW -- or we or our successors may not be here in 1990.

Task Group 5 addressed this problem -- maybe they can discuss this in the plenary sessions.

Plans are underway for the Defense Documentation Center (DDC) to become the Defense Technical Information Center (DTIC). The effective date will be 14 Oct 1979. The name change represents an upgrading of the role and functions of DDC in a move to enhance the DoD Technical Information program and improve support of research and development (R&D) management. Dr. Ruth M. Davis, recently appointed to the Department of Energy (DOE), spearheaded this intensive, well-meaning effort during her tenure as Deputy Under Secretary of Defense for Research and Engineering (Research and Advanced Technology). The DLA-sponsored Information Analysis Centers will then be under the operational control of DTIC. We plan to incorporate marketing of IAC services into our program. Our bibliographic data base has been enriched by input from four IACs and we plan to include this information in on-line and batch bibliographies by the end of this calendar year. About 100,000 records are involved with new input totaling 10,000 annually.



This slide (see Figure 2) outlines activity underway at DDC that will be available within three months, effective with TAB 80-1, the first TAB for CY 80. We will be including information about all unclassified technical reports in the Indexes to TAB. Unclassified unlimited index information currently is available only from NTIS through GRA.

At the request of our users we have at the printers a Directory containing functions and phone numbers. The functions performed will be listed in alphabetical order. Two copies will be provided to each registered user. Please give us your comments on the Directory's utility and recommendations for improvement, along with any need for additional copies. We also would like to provide information about new equipment and processes that pertain to library automation.

The committee on Information Hangups has brought the problem of acquiring non-technical report literature, such as regulations or technical manuals, to DDC's attention as a major problem of military libraries and especially contractor libraries. A subcommittee is currently exploring the problem with the hopes of building a database that will help librarians locate the sources and procedures of acquiring this special class of military publications. Hopefully, this database will guide librarians through the maze of regulations that now confront them. DDC has offered to maintain the database and provide access through our Reference Branch once the Hangups subcommittee completes its work. This database will work for you only if the information is accurate and current. If you have had experience in one or more of the procurement chains help us by adding your knowledge to the database.

News Flash . . . DDC hopes to fund a new edition of "How to Get it - A Guide to Defense-Related Documents."

Another time-consuming problem that has been brought to our attention is the procurement of on-line services. (How do we get access to commercial or federal databases?) DDC, with the help of the Federal Library Committee, is planning on putting together a guide for accessing on-line services. Much time is lost in the justification phase of procurement, not to mention the confusion of regulations that guide the procurement process. It is DDC's goal to make procurement easier by supplying as much information as possible to managers of libraries who face the task of justifying on-line services. We encourage your help and support in giving us your experience and advice on database procurement. (See Figure 3)

Sometime in CY 80, depending on resource availability, we will investigate and possibly provide unclassified access to the DDC data bases in a dial-up mode from almost any terminal. To reduce costs, we will investigate the feasibility of acquiring Tymshare or Tymnet for communications. That means that a user in L.A. would have unclassified on-line access to DDC if they had any terminal and paid not long distance call rates, but Tymshare rates. We are also committed to completing the SBIE. If successful, we would then systematically schedule additional users into the program on an operational basis.



One of the objectives in our name change is to provide more support to R&D managers. They are interested in the program, planning and budgeting process. We will start by providing support to OUSDR&E. This means additional data bases with a project management orientation. What we accomplish for OUSDR&E may then be made available to your managers.

This chart (see Figure 4) also indicates an effort that we are now involved in. The first two items I will talk more about later are the Data Element Dictionary, which is in draft form and a revision to the DD Form 1473. We are also working in conjunction with the Military Services and OUSDR&E in revising directives relative to a scientific and technical information program. This will ultimately require revision of most of the forms now used in conjunction with DDC's products and services.

DDC has organized a Data Element Dictionary (DED) (see Figure 5) to define and describe the data elements used in its system for data in the four basic data banks resident at DDC -- Technical Report, 1498, 1634 and IR&D. These include similar but overlapping data items, many of which were set up in answer to specific service requirements. There are also data items established over the years for the purposes of broad services like TR requests, BIB request, history files, etc. In connection with the redesign of DDC's ADP system, all of these data elements are described herein in a single format. This new and austere set of elements crosses data base lines, providing common definitions and a standardized basis for storage and retrieval.

In step with the other improvements in DDC, we are in the process of updating the report documentation page, DD Form 1473 (see Figure 6), which is the title page of scientific and technical reports prepared for the DoD.

We have always tried to cater to the specific needs of our users. As research and technology develops so do new requirements for background information and state-of-the-art knowledge. When we become aware of any additional needs we try to cover them with the capability of the DDC system to provide the information. In this process we find that some data or routines have to be added while others have to be changed to provide the additional information more efficiently or even as efficiently as heretofore. Consequently, it becomes necessary to make changes in the input to have better output.

After quite a few drafts we have developed this version (show view) which tries to meet data, security, space, cataloging, format, human engineering aspects (quite an order). We circulated this form in-house and outside DDC for comments and suggestions for more improvement. Of about 100 letters sent, to date we received 55 replies. Of these, 13 concurred without comment, 6 concurred with 1 or 2 comments, 4 had up to 5 comments, 14 had 6 or more comments, and 2 said it was "impossible;" 16 asked for more time to review.

We are suspect of the concurrence without comment -- they probably never really looked at the form, although some said they actually did. Neither can we believe that it is "impossible" since only the shaded



areas have been revised.

We are trying to use all the new suggestions and improvements we received unless they are in direct opposition to what is on the form or what someone else has suggested. Even the latter are being studied to determine the problem -- because in these areas there definitely is a problem that needs attention and maybe change. One salient feature of the form is that it facilitates the use of unlimited unclassified information and limited and classified information.

We hope we can satisfy most users of the form and improve the output products to our requesters for information before too long. We are trying to have the form coordinated and printed, ready for use, by 1 Jan 80.

I have attempted to be brief and not speculate about the future. The items that I have mentioned are on the horizon, and although few in number, they are very significant and will have an impact on both our futures.

Thanks for your time and attention, and time permitting, I will answer any questions you have about DDC.

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BY THE COMPTROLLER GENERAL

# Report To The Congress

## OF THE UNITED STATES

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### Better Information Management Policies Needed: A Study Of Scientific And Technical Bibliographic Services

Although the Federal Government spends billions of dollars to create, collect, and disseminate scientific and technical information, it pays little attention to information policies or how information activities are managed.

GAO's study of Government information centers providing bibliographic services to the scientific and technical community confirmed the need for better management cited in many reports in the past. GAO found evidence of duplication, proliferation of facilities, and inconsistent cost recovery practices. The vagueness of authorizing laws and function statements contributes to the duplication of services.

Each department and agency should designate a top official to coordinate and manage its information, and the Office of Management and Budget should establish a committee to coordinate Government scientific and technical information activities.



Figure 1



D D C

B E C O M E S

D T I C

## NEW SERVICES

- TAB INDEX ENRICHMENT  
TAB 80-1
- DDC DIRECTORY
- LIBRARY SUPPORT
  - AUTOMATION
  - ACQUISITION OF DoD PUBLICATIONS
  - ACCESS TO COMMERCIAL DATA BASE

Figure 2



## PROPOSED SERVICES

- ON-LINE DIAL-UP WITH DIVERSE DEVICES
- BECOME THE DoD OLC
- BECOME THE OSD "LOCKHEED"

Figure 3

## OTHER ACTIVITY

- D E D
- REVISED DD 1473
- NEW DIRECTIVES
- REVISION OF ALL FORMS

Figure 4



**DDCH 4185.8**

**DATA ELEMENT DICTIONARY  
DDC UNIFIED DATA BASE**

**(Second Draft)**



**DEFENSE DOCUMENTATION CENTER**

**DEFENSE LOGISTICS AGENCY**

**CAMERON STATION - ALEXANDRIA, VIRGINIA 22314**

**JULY 1979**

Figure 5

REPORT DOCUMENTATION PAGE

1a. Security Class. of Report <input type="checkbox"/> Uncl <input type="checkbox"/> Conf <input type="checkbox"/> Sec <input type="checkbox"/>		1b. Special Control Code of Report <input type="checkbox"/> Foreign Restricted <input type="checkbox"/> RD <input type="checkbox"/> NATO <input type="checkbox"/> FRD <input type="checkbox"/> CNWDI		2. DTIC Accession No. (AD)	
3. Declassification and Downgrading Statement of Report			4. Distribution and Availability Statement of Report		
5a. UNCLASSIFIED Title					
5b. CLASSIFIED Title					
DRAFT SAMPLE					
5c. Security Classification of CLASSIFIED Title <input type="checkbox"/> Conf <input type="checkbox"/> Secret <input type="checkbox"/>			5d. Special Control Code of Title <input type="checkbox"/> Foreign Restricted <input type="checkbox"/> NATO <input type="checkbox"/> CNWDI <input type="checkbox"/> RD <input type="checkbox"/> FRD <input type="checkbox"/>		
6. Author(s)					
7. Type of Report and Period of Time Covered			8. Date of Publication		9. Page Count
10. Supplementary Information					
11. Performing Organization Report No.(s)			12. Monitoring Organization Report No.(s)		
13a. Performing Organization-Name & Address		13b. Perf. Org. Code	14a. Responsible Government Organization Name & Address (Monitoring Org.)		14b. Mon. Org. Code
15a. Responsible Govt. Organization-Name & Address (Controlling Organization)		15b. Cont. Org. Code	16. Contract/Grant Number(s)		



17. Source of Funding	Program Element	Project Number	Task Number (Technical Effort)	Work Unit Number
RD&E				
Primary				
Contributing				
OTHER (Specify)				
18. Subject Area Categories		19a. Subject Retrieval Terms	19b. Security Classification of Subject-term set <input type="checkbox"/> Uncl <input type="checkbox"/> Conf <input type="checkbox"/> Secret <input type="checkbox"/>	
Field				
Group				
Sub-group				
20a. Abstract				
<h1>DRAFT SAMPLE</h1>				
20b. Security Classification of Abstract <input type="checkbox"/> Uncl <input type="checkbox"/> Conf <input type="checkbox"/> Secret <input type="checkbox"/>			20c. Special Control Code of Abstract <input type="checkbox"/> Foreign Restricted <input type="checkbox"/> CNWDI <input type="checkbox"/> NATO <input type="checkbox"/> RD <input type="checkbox"/> FRD <input type="checkbox"/>	
20d. Distribution/Availability of Abstract <input type="checkbox"/> Same as report <input type="checkbox"/> Abstract available to DTIC Users				
21. Related Documentation <input type="checkbox"/> Specified below with subj area categories <input type="checkbox"/> No related documentation				
Work Unit Accession Numbers	AD Numbers	Other Numbers (Report, Contract, etc.)		

Figure 6 (Continued)

## TASK GROUP 1

### CONTRACTING OUT LIBRARY SERVICES in the 1990's

Discussion Leader: Eleanor Driscoll, Air Force Systems Command &  
Capt. Frederick R. Marcotte, USAFR

Emphasis will be on contracting out library functions. The OMB person responsible for the OMB Circular A-76-Rev. will be on the program as well as panelists who have actual experience. Problems, relations with contractors, preparing a statement of work, selecting and evaluating contractors will be discussed.

\* \* \* \* \*

### Wednesday, 3 October

#### 1050-1200 - Session 1

Panel introduction, handouts

Goals of the task group - Eleanor Driscoll

State of contractor libraries in DoD (total; partial) - Fred Marcotte

#### 1330-1500 - Session 2

Office of Management and Budget (OPR) - Discussion and Questions

DoD Team - Discussion and Questions

### Thursday, 4 October

#### 0920-1130 - Session 3

\* A contractor librarian - Jessica Rich  
NASA and contracting - Madeline Losee

#### 1330-1515 - Session 4

Statement of work, samples, discussion - Eleanor Driscoll, Fred Marcotte

### Friday, 5 October

#### 0950-1200 - General session

Task Group summary - Eleanor Driscoll

\*Paper not available at time of publication.





Task Group Leaders  
Capt. Frederick R. Marcotte, USAFR  
Ms. Eleanor Driscoll, Air Force Systems Command



Task Group 1

## CONTRACTING OUT LIBRARY SERVICES IN THE 1990s

Eleanor Driscoll  
Air Force Systems Command

Captain Frederick Marcotte, USAFR

NOTE. We decided to reproduce the tapes rather than condense remarks because we believe it will be more informative and interesting.

Purpose of this Task Group is to explore the "state of the art" of DoD contract library operations, particularly in terms of the recently revised OMB Circular A-76 "Policies for Acquiring Commercial or Industrial Products and Services needed by the Government," and to make recommendations to the entire group for further study of this concept. Since there was excellent interaction between the workshop participants and leaders, we have reproduced almost "in toto" the audio tapes of the sessions.

Driscoll: Capt. Marcotte and I have been working together for about three years gathering information about the contract libraries, copies of documents concerning them, statements of work and performance evaluation checklists. Our interest was originally aroused as a result of my staff visits to three AFSC contractor-operated libraries. I found great variations in the performance of the libraries, in the services offered, and particularly, in the quality of library services. I compared them with each other and also with our regular Systems Command technical libraries. The smallest was a three-man operation at the 6585th Test Group, Holloman AFB, NM. The largest, an eight-man operation at the Arnold Engineering Development Center (AEDC), is a totally contractor-run facility operated for AFSC by ARO, Inc. in Tullahoma, Tennessee. AFSC has about eighty military people there and 200 Air Force civilians. The Air Force people are there primarily to monitor the contract. All operations are manned and run by the contractor. The library, although a tiny segment of the total contract is identified as an individual task in the contract. The differences I noticed among these libraries appeared to be, first, the direct result of the statements of work. (These varied from very complete statements of work to about four lines of the total contract.) Second, and this is very important, was the result of the attitude of the contract personnel who provided the services, and of the AF personnel who monitored the performance. For the most part, it was very difficult for me in the first two or three visits to get a handle on what was going on. Contract monitors, for the most part, did not appear interested in library service--typical of many of our regular situations. The contract personnel, the librarians and supervisors were reluctant to talk with me or to answer questions. Any question threw them immediately on the defensive. This was because, literally, the only person who has a right to deal with contractor personnel is the Technical Representative of the



Contracting Office, the TRCO. This fact will present a problem to us in the future as the number of contract libraries increases. It's already presented a problem to me. We've decided that if it ever becomes necessary I, or someone in my position, will be designated an alternate TRCO for purposes of staff assistance visits in order to interact freely with contract personnel. I do think AFSC contract personnel have come to realize, over the years, that I am not in there "gunning for them." Incidentally, we do have a representative of the "opposition" with us this week -- Jessica Rich who is the contract librarian in charge of Air Force's Technical Library operated at the Western Space Missile and Test Range, Vandenberg AFB, I have to say Jessica, to date you've been a great contract librarian. I only wish you were working directly for the Air Force. I've never had a problem with Jessica's library, her personnel have always cooperated with me when I've visited. We have never had this, "You're trying to do us out of a contract" type of relationship. Her military and Air Force monitors have been excellent too. Both sides want good library service, and this is what we need for a good contract library -- good attitude on the part of both groups.

When Fred and I first began to talk about contract libraries, we decided the first thing to do was to come up with a standard statement of work -- one which could be used in the event we were going to contract out more libraries. In doing this, we collected a lot of information which we're happy to share with you. We've had copy machines going madly the last few weeks. The handout you will get tomorrow will be even larger than this one. We have some sample statements of work, good and bad, for you and most of them are really bad, I'll tell you right now. The first document in the handout you received today is a magic document -- a copy of Circular A-76. Following a discussion of A-76, Fred will talk to you on what we call the state-of-the-art in contracting out library services. This afternoon at 1:30, Mr. William Russell, who is the OPR for this Circular at OMB, will talk to us and answer questions. I think his speech will be the highlight of the workshop and your opportunity to find out what's going on.

We tried very hard to get someone from DoD to speak to us, but they were unable to send a representative to talk to us. We have also asked some people in the audience to update us on what is going on in the Army, Navy and Air Force, time permitting. On Thursday, we hope to get to a discussion of that statement of work (SOW), the real key to contracting operations. I'd like to suggest one more thing before we start. Let's exclude any discussion of our personal or professional opinions about whether this is good or bad. These will have nothing to do with the decision that someone makes to contract out an operation. Talk about it after 4:00.

Now, to A-76, you may never have thought of your library as a commercial or industrial product, but that is exactly the way OMB looks at it. The subject of the Circular is Policies for Acquiring Commercial and Industrial Products and Services Needed by the Government. Since I have no doubt that all of you can read, I'm not going to do any more than hit the high spots and let you study the details



at leisure. The crux of the Circular is stated in Paragraph 1. It says, "This Circular establishes the policies and procedures used to determine whether needed commercial or industrial type work should be done by contract or in-house." Turn to your definitions and you will read in Paragraph 5 "A Government commercial or industrial activity is one that is operated and managed by a federal executive agency. It is an activity which must be separable from other functions and a regularly needed activity." And now if you'll turn to Attachment A for a minute, you'll find the word "library" mentioned once, on the last page, under Other Services. You will also find "library" mentioned in the R&D Development Area under R&D Support Services and indirectly under Other Services, such as, Information Systems and Distribution.

The second definition of immediate interest to us is in E - "A private commercial source is a private business, university or other non-Federal activity which provides a commercial or industrial product or service required by the Government." And, how many thousands of state, county and municipal systems, colleges, universities and special libraries there are which fall in this category! These categories are very clear to us who work in the R&D environment. In view of the extent of contracting out I've already seen in DoD and the large amount that I know right now is being considered, I doubt there is much anyone can do to keep from contracting out our libraries. In Paragraph 8, the terms under which a library may be authorized for in-house operation are spelled out--"There is no satisfactory service available, or if so, its use would require an unacceptable delay or disruption of an essential agency program." To be realistic, as I just said a minute ago, let's think of these thousands of municipal, county and state libraries or systems which are available to operate our post, base, station libraries on DoD installations--operate them as separate entities for the Government, or as branches of their own libraries. Or let's think of the thousands of colleges, junior colleges and university libraries which are available to operate these same libraries and also our technical, medical, and even academic libraries.

And, then look to 8B--"In-house operation of a Government commercial or industrial activity may be authorized if a comparative cost analysis indicates the Government can provide them cheaper." Contracting out of library operations may not be authorized if a comparative cost analysis prepared in accordance with Paragraph 9 indicates that the Government can provide, or is providing, a product or service at a lower total cost than if it were obtained from a private commercial source. You have in your handout a copy of the cost comparison handbook to be used. This contains detailed instructions for developing a comprehensive and valid comparison of the estimated cost to the Government of acquiring a product or service by a contractor and, again, if providing it in-house, Government resources. Study this handbook carefully. If you are approached on the subject of contracting out your activity, read it again and again. It might not hurt to practice filling out some of the forms. This afternoon, Mr. Russell will give us additional information on costing. If you are called on to come up with such information to justify retention of your activity or contracting it out, don't do it alone. First of all, contact your higher headquarters. On Page 5 of this handout, it



recommends that a task group be formed and a plan and a time schedule be established. The schedule must allow, it says, adequate time for the preparation of a statement of work. I think it behooves all of us to do some groundwork now--to be prepared. The supplement states that the statement of work is a "critical step" and it certainly is. We'll discuss this further tomorrow. I'm going to stop discussing the Circular at this point. One last word before Fred takes over. Why this sudden emphasis on contracting out support activities? It's certainly not a new idea. The ASFSC library at Vandenberg, where Jessica is, has been contracted for about 16 years. In fact, most of the support activities at WSMC are contracted out to one firm, the Federal Electric Company. Arnold Engineering Development Center, Tullahoma, Tennessee, as I mentioned, has been in existence even longer, with the library again just a tiny segment of that total contracted facility. This Administration from the start has been pro the private sector, pro the idea that the government should not be in any business that could be done by the private sector. Although the Circular says that contracting will not be done to circumvent manning limitations, we all in this room believe this is already done. We do it to ourselves when we contract out some of our library activities; our cataloging functions for example. Third, and most important, I don't have to tell any federal employee that the American taxpayer and many of our elected officials consider the average government employee overpaid, not very productive, and frequently incompetent. They believe that what we are doing can be done more cheaply and better by the private sector. There are some factors, however, today, which may slow down contracting. One is union activity. These organizations are fighting to keep activities in-house--they have, of course, a big stake in it. We've given you in your handout a copy of the July 1979 issue of Army which addresses this subject. Through the General Accounting Office, Congress is investigating reputed abuses of contracting out. There is also an article in the 3 September 79 Federal Times on this subject.

Following this introduction, Fred will brief you on where DoD libraries stand today, as far as actual existing contracts are concerned. Fred--

Captain Fred Marcotte:

As Miss Driscoll said, I'm a Reservist, and I get into Headquarters several times a year. I've been working on contracting since December of 1976, well before Circular A-76 ever came out in draft form and before Miss Driscoll and I ever heard of it. Some of you I've talked to on the phone, trying to track down who is doing what and where, and it is hard. It has been like pulling teeth without benefit of anesthesia. One person will know a little bit and send me on a track to someone else. I'll call about ten other people and finally find out something. I found the Federal Library Committee useless, in terms of being any central repository for information on contracts. I went outside of DoD, too. Some of you, for example, have heard Mary Huffer's talk on contracting libraries. They're having some problems right now over contracting a Bureau of Mines Library in Pittsburgh. This summer, when I was here working on this project, somebody



mentioned there's a Navy library being contracted near Pensacola. It took me about an hour and a half to track it down. It turned out to be an EPA information facility which is being contracted. This happens, sometimes, when you're trying to track things down.

There is no central repository. Miss Driscoll and I have established a file that she keeps at the Headquarters with samples of all the contracts we could locate, and I've got another six-inch stack that we didn't reproduce for you. You're going to get another 1½ inches of material tomorrow of actual work statements and contracts we selected from them. It's not easy trying to find this information.

The actual topic is supposed to be Contracting Out in the 1990s, but I'm sticking to what I know what's really happening right now. It's a mixed bag. What we're talking about is contracts for total library facilities, not contracts for the acquisitions function which I think TRADOC is looking into, contracts for retrospective cataloging of materials which a Systems Command library is doing that I know of; contracting for current materials - a couple of EPA libraries contract for literature searches, for example. Instead of putting Lockheed or SDC access into their own libraries because of staff time required to do those searches, they simply send them to a "middleman." EPA also centralizes their literature searching in Cincinnati. You can also contract for interlibrary loan another way to save staff time. There's a Cleveland firm that does this, as well as, some others. Most of your technical libraries can get translations done on a contract basis. And, of course, you have service contracts for OCLC, data base services, etc. There are many partial-service contracts, but the primary thing I want to talk about is total library contracting. Within library contracts, you have two categories. The most difficult to get a handle on is the total facilities contract, such as, that at Arnold Eng & Dev Ctr or WSMC where the contract for the library operation is buried in a contract for the entire facility. This is not the thrust of A-76. The A-76 Circular is directed towards specific functions such as libraries. Most current contracts I have been able to discover are for the whole facility. Take the Interior contract at the Bureau of Mines in Pittsburgh. I talked to Mary Huffer in June about that. She had just learned of the plan, and they had about six days to rewrite a work statement someone had thrown together for that contract. The library wasn't mentioned as a specific task for most people; it was an insignificant function of a total facilities contract. It's very minor dollars. To us it's important because we're librarians, but to people involved in writing contracts, it's a very, very minor aspect of a contract. So one of the first things you have to do is keep an ear to the ground and find out what's going on. For instance, I heard rumors, and that's about what they are, that the Navy is thinking of totally contracting out two new facilities, the library to be included in the contract. To the best of my knowledge, they Navy has no current contracts.

I'm now going to go through a list of what I have discovered so far. The Army at Fort Gordon, has been working for three years on that cost comparison handbook type of study for doing the facilities. Nel, have any of you any contact at all?



Response: Nel Strickland, Army Librarian. The librarians have not been brought into that study at all. In fact, they weren't even aware it was going on until I called down and asked them for information.

Capt. Marcotte: How did you discover it?

Response: Nel Strickland. My management contact in the office had indicated that he had information that Gordon was working on it.

Capt. Marcotte: Right. Which includes the library?

Response: Nel Strickland. Yes, but, as I said, the librarians were not even aware this was going on.

Capt. Marcotte: This is why I say it pays to be prepared. Tomorrow you'll be able to go through some sample work statements. It's really hard to create from scratch a work statement that's going to be reasonable, that you can live with, both you and the contractor.

Question: When you've come into contact with this total facilities contract, do you find that if you want to get individual contracts for the library you can do so, or are they limiting you to one paragraph?

Capt. Marcotte: Within Systems Command, the library work statements for Arnold and ESMC total facilities contract is about two pages. You will receive copies in tomorrow's handout. The one for WSMC, I believe, is still one paragraph. For instance, in my research, all of the ERDA facilities--Argonne National Lab., Oak Ridge National Lab., library service is covered in one sentence--they will provide quality library service. The two people I talked to within ERDA were completely satisfied. I talked to the librarians, the contractors and the people who were providing the service. These were total facilities contracts with only one sentence in there. They're R&D activities, and they've gotten great support from the library on one sentence.

Comment: Eleanor Driscoll. In the case of the Eastern Test Range at Patrick, I didn't like the SOW I saw so I bird-dogged it until the contract came up for renegotiation. At that point, I persuaded the OPR to allow me to have input. I did improve the statement of work somewhat. I guess every three years I'll be able to improve it a little more. You simply have to find out where contracts are being written and just push your way in.

Capt. Marcotte: Also, in the Systems Command, Miss Driscoll wrote into the Air Force Systems Command library regulation a requirement that SOWs for contract library services must be reviewed by the Command Librarian.

Comment: Eleanor Driscoll. You must also get the requirement into a procurement regulation.

Capt. Marcotte: I'm quite sure Miss Driscoll will provide you with the wording of her regulation. All of the other facilities are total facilities contracts. The best source of library contracts is



NASA--the Goddard facility, Dryden, out in California and Kennedy Space Flight Center. They tend to be very wordy in their work statements. Tomorrow morning's session will be about writing work statements. NASA's Goddard work statement just for the library is approximately 250 pages long, versus the one paragraph for SAMTEC and the one sentence for ERDA, so you see, there's no one standard on doing this. If you have a good contractor and they're conscientious, they are going to give you good service. The second part of writing a contract for the library, in terms of getting a good work statement, is getting a good checklist for evaluating performance. We have a couple of those included for tomorrow, also. You'll find that in most cases TERCO, or contract task list monitor for the library, will not be a librarian. The one at Arnold is a very, very conscientious individual, but her primary duty is responsibility for Forms Management. I talked to her when I was down there, and Miss Driscoll talks to her occasionally. She's extremely willing to cooperate. If we provide the information which we feel should be checked, she's willing to do it.

Miss Driscoll: She's far better than the special services officer who preceded her. She is extremely conscientious and cooperative.

Capt. Marcotte: So, we have all these problems. How do we get a good contract in the first place? First, decent work statement into the contract, a lot of work in terms of stepping on toes, shouting, screaming, ranting and raving, or whatever you have to do, and second, writing a good performance checklist, and third, finding out how to do this, getting in even to see the contractor monitor. I've observed from talking with Miss Driscoll that most of the librarians in these contract agencies want to do a good job, a quality job, but then you run into contracting regulations again. Contracting regulations says "Is it adequate?" Not is it superior or topnotch but is it adequate? The Government only wants adequate service for its money. They don't want to pay for topnotch service, so you have to fight to get it. The contractor often does not want to spend the money to get into the 20th Century, in terms of buying data base services; for example, OCLC, because this costs money. The contract that I'm familiar with is at Arnold because I've been there. There the library operation is listed as overhead. It is not part of a line function. You know what they do with overhead--they cut it as low as possible. So, where are they going to spend money? Where are they putting the library function? If it's a technical library, where do they put the STINFO? At Arnold, the STINFO function is separate from the library operation. At some Systems Command activities STINFO is part of the library operation and the staff performs both functions. This is something you might be able to use as leverage in a technical library situation. Why is STINFO part of the line operation and the technical library facility part of the overhead?

Now, I want to go through what I have discovered, and would like you to participate in this. This is three years worth of research, summarized in June, as to who's doing what in the whole Federal Government--of total facilities, including the library, or simply library contracts. I've done the Air Force first because I'm sure about these situations. Arnold Engineering Development Center,



Tennessee, is a total facilities contract, Western Space and Missile Center, Vandenberg AFB, California, a facilities contract, but there are several contractors in that case, not just one. Eastern Space and Missile Center, Patrick AFB, Florida, another facilities contract. Air Force Special Weapons Center at Holloman is no longer an active contract. It did not work out; Vance AFB, Oklahoma--this is an Air Training Command base-support contract, for those of you interested in base-type libraries. This is the first time in the Air Force they've contracted a base library as part of a total facilities contract--the job statement for the library, here again, is one or two pages long. We did not get a copy of the contract but do have a copy of the contract monitor's checklist.

Army - I know of one current Army contract--that's Sierra Army Depot out in California. That's been going on for several years. This is a contract with a county library system--the county operates a branch for base support. Back to Fort Gordon - Fort Gordon has been working for three years on cost studies for contracting out base facilities. I talked to a manpower person at Army Headquarters who had attended a workshop on the cost comparison handbook. He said the people at Fort Gordon knew more than the people who made out the cost comparison handbook! If you need information, talk to Fort Gordon. They know what's going on. They've been working on it for three years.

Navy - I could not find any current Navy contracts for facilities.

Comment: I don't know the name of the base, but I understand there's one near Seattle--it's a brand new Polaris base--that will come under a provisional contract.

Comment: Eleanor Driscoll: Gerry Coble will talk to us about that tomorrow.

Non-DoD Activities - Environmental Protection Agency. They have a rather unique contract at Research Triangle Park, North Carolina, a contract with the University of North Carolina Library School to operate their tech information facility or library. That is a current contract. EPA is moving very heavily into contracting. Sabine Island, Gulf Breeze, Florida, is a library operation that's part of a data processing contract. The Headquarters library, Washington, D.C. is currently proposing to expand its partial contract--it is not yet a total facilities contract.

NASA - Goddard Space Flight Center in Maryland, Kennedy Space Flight Center in Florida, Ames Research Center in California--these are technical information contracts only and are extremely detailed. This is partly because the whole NASA on-line retrieval system is contracted out too. This is part of the library system's contract. Madeline Losee is their expert downtown. She was supposed to be with us tomorrow, but has had to go out of town.

Finally, Interior - They're moving out rapidly. Mary Huffer, of course, gave a presentation at ALA on contracting. Interior is still negotiating the Bureau of Mines contract outside Pittsburgh. That

again is a total facilities contract. Mrs. Huffer mentioned in her talk that there were two other facilities being considered for contracts but she did not say where these facilities were.

Department of Energy - All the Department of Energy facilities such as, Argonne National Lab., Oak Ridge National Lab. are operated under complete facility contracts with one line statements of work pertaining to the library.

That completes my three years of research as to what is currently contracted in the way of libraries. Are there any additions?

Question: Has DOE in Washington gone contract too?

Capt. Marcotte: I'm not sure. I don't know what DOE has done in its Headquarters. I'm primarily talking about research facilities in the field. Does anybody know of any other libraries that are contract operations?

Selfridge, Michigan, an Army installation, is out on bid now.

Capt. Marcotte: Is that a facilities contract?

Comment: Nel Stickland. Yes, I'm not sure if it's total, but the library will not be independent. It's part of a larger contract.

Comment: Natalie McMahon, Air Force. I believe McClellan AFB is considering contracting pretty nearly all facilities which would include the library.

Capt. Marcotte: Was that a McClellan decision? Who is their parent agency?

Comment: Natalie McMahon. McClellan is in Air Force Logistical Command, but I don't think it was an AFLC decision. I'll try to call someone and find out what the status is. I just found out a short time ago.

Capt. Marcotte: Nobody ever tells you. You just have to find out.

Question: Are we talking about places that are really seriously considering a contract?

Capt. Marcotte: Seriously considering, under negotiation, or already under one.

Comment: I worked on an Air Force contract at the range at Nellis AFB. It's a three year old contract for the technical library operation and maintenance of it.

Capt. Marcotte: Just to recap some of the problems that I've found in terms of contracts; Identifying the library as part of overhead instead of as a line function, acceptable level of operation versus quality of operation, most contract monitors are not librarians and do not know anything about libraries, checklists are quantitatively



rather than qualitatively oriented. Is that right, Jessica? Do they come down and say, "How many interlibrary loans did you do?" (If you don't want to answer this, you don't have to.)

Answer: Jessica Rich (Librarian, Western Space Missile & Test Range.) No, I can answer it. I've never been asked.

Capt. Marcotte: We have two handouts for tomorrow on preparing statements of work and checklists. They talk a little bit about how to establish qualitative standards. It's a problem for the whole library field. There have been some articles in College and Research Libraries and several other library journals complaining about the fact that most librarians take the easy way out and record circulation and interlibrary loan statistics, but not how they're satisfying their customers. This group may want to establish an on-going committee to try to come up with some type of qualitative standards in order to judge what's going on in a contract. The idea is that if you don't have satisfied customers then it's not a good operation.

Capt. Marcotte: I've been trying in terms of some of my field visits to some of the Air Force Systems Command libraries to get the librarians to do market surveys. This is not in any contract, but there are techniques for surveying. Marketing Techniques for Non Profit Organizations is the title of a book which has survey techniques, such as, "Am I reaching my customers, or is it a passive operation?" I've found that as a service activity in a library, you get the best level of service that you can, but there's always more that you can do if you've got the money to do it. So much depends on the quality of the librarian that you have in terms of the difference between adequate service and quality service. If you try to put into a contract some definition of quality, they'll just railroad you out of town. You can't use "shall" in a contract; you have to use "will;" when you have to quantify everything, you lose the quality.

Comment: Eleanor Driscoll. An interesting thing about this market survey business is that at Arnold the woman who was test monitor did prepare a survey, but she could only send the survey to Air Force military and civilian personnel. She could not survey contract personnel who were also being served by this library, and were, by far, the greater group.

Capt. Marcotte: That's another problem connected with contracts -- the relationship between contractor employees and the service group. Sometimes at these total facilities contracts, there are 100 or so military and several thousand contractor employees. The personal services aspect of the contract has to be worded very carefully; in fact, I know of a partial contract that was written one year by a library for reference services from on-line service, instead of manually. The reference function was divided, and the on-line services from Lockheed and SDC were to be contracted out. That was a very, very carefully worded statement of work because of the fact that librarians were providing some reference work and contractors were providing other reference work. It's a lot easier if you're just doing a total facilities contract because you know it's going to be subsumed in there. One of the documents you'll get tomorrow is a total contract which



includes all of the Fair Labor Act, Minimum Wage, Buy America, all these attachments that must be in a contract. The Air Force is doing two hundred functional studies under A-76 next year. The library, however, is not included. Surveys are all controlled at the Department level - Department of the Army, Department of the Navy, Department of the Air Force. These are the people controlling the functions that are being studied under A-76, but as you go through this list, you know that there are other things going on. People are jumping the gun and have been doing these things for years already, in terms of what they're contracting out. So what comes up under A-76 as a functional cost study for Command-wide or Department-wide application may bear no relationship to what's actually going to happen in libraries. Keep your ear to the ground for what's actually going on. Of these 200 Air Force studies I mentioned, one is a three-person reprographics function at a small base out of California. This is among the 15 or so at Air Force Systems Command. Libraries are not included in the Air Force studies. I don't know what's included in the Navy or Army. Maybe Mr. Russell this afternoon can clarify the situation as to just what they want versus what's been happening in DoD. A-76 does seem to be the wave of the future. Some of the handouts you have today are general background information; they talk about the opposition, the union's opposition in particular. There's an article from the Federal Times on this Bureau of Mines contract, which we included in the handout. This is what happens in the White House when Carter says to do something; by the time this trickles down to the operating level, he might never recognize what he wanted. The same thing is happening with A-76 to some extent. Each person is going his own way, interpreting it as what he wants to do. "Be Prepared" is all I can say.

Gerry Coble, can you bring us up-to-date on what's going on in the Navy?

Mr. Coble: In a three year program in the Navy, libraries are being considered for contracting out . . . It simply means they will consider the feasibility and that starts the clock. All the libraries in a given Command, all Navy libraries could be affected by this . . . So far as activity is concerned, say a certain kind of ship is being built, and as soon as it's built, it's turned over to a private source. They're not Navy-commissioned, they're operated by a private contractor. Installations that make training devices - they're to be operated by contract, too. Apparently, what the Command intends to do is shut down the site library. We simply will not have a library. There may be a Defense Technical Information Center capability with someone sitting at a terminal providing technical information services. But what they propose to do - and a study is now underway by the Florida State University of the State of Florida - what they intend to do is contract for the university to provide information services. The implication that I get is there will be nobody from the university actually stationed at that Center. Naturally, there will be jobs displaced from that activity. We'll be watching that facility to see what happens . . . A-76 makes it quite clear that if any library is operated under contract anywhere in the Federal Government, then you have to explain why your library cannot be operated by a contractor. You are, in a sense, guilty before you start. There are enough libraries so no one should feel guilty if he's forced into that



situation. It's just one of those things that happens. (Portions of the preceding comments were omitted because they were inaudible on the tape recording)

Comment: Earl LaFon: This has nothing to do with A-76 except for the fact of contracting. In my case, for example, the next higher level of authority simply says, "You will contract that out" and that's been going on for a couple of years. If I say, "What if I don't want to?", he says, "I want you to want to. I want you to do it right now." So, I want to!

Comment: Gerry Coble: I'd just like to say one more thing that I think might have bearing. What I've learned so far in the Navy is that A-76 applies to small operations. If the total cost is less than \$100,000 and if there are no adverse personnel actions, then a cost comparison is not necessary--local management could simply opt to contract or not.

Marcotte: That would have to be very small, though, considering the cost factor you would have to put in for salaries and wages. That adds up very fast.

Coble: So that may very well affect what I'm doing. Navy says they're watching this with great interest. Well, so am I!

OMB CIRCULAR A-76 REVISED

Mr. William D. Russell  
Office of Management and Budget (OPR)

Introduction by Ms. Driscoll: Our speaker this afternoon is Mr. William D. Russell, Office of Management and Budget (OMB) and OPR for Circular A-76. Mr. Russell served in World War II in the U.S. Marine Corps as an airborne radar technician. He later worked as an Air Force civilian at Brookley Field, Alabama. He has been employed by Eastern Air Lines and for 23 years by RCA. Since 1975 he has been at OMB. I know you will be deeply interested in his remarks on the implications A-76 has for military librarians. Mr. Russell.

Mr. Russell: Thank you Ms. Driscoll. This is my first session like this with a library group. I'm sort of looking forward to it. I know I'll get very stimulating and intellectual questions as you respond to some of the comments that I make. I saw an interesting bumper sticker on the way over. It says, "Librarians are novel lovers." Now this is either a novel way of saying that librarians love books or it's some kind of citation--I'm not really sure which!

But what I'd like to do is talk a little bit in general about the Circular, because unfortunately, I'm not in a position to talk in depth about the Circular in every individual field that it has applicability. We're talking here about a policy that applies to everything that federal government does that could be done in the private sector. This is everything from custodian services to complex engineering projects, to repair of automobiles, to automatic data processing, and library services. We keep hearing from people in these different specialties, saying, "You didn't really address all of these unique features of our industry"--the helicopter service people, the data processing people, the telecommunications people. Well, we didn't because we couldn't. If we wrote a book that covered each one of these industries in detail, it wouldn't be a 12-page OMB Circular; it would be a series of volumes. So what we've tried to do, in the broadest possible terms (consistent with the principle that when you get out a directive at the top of an organization, it should be very general, and implementing instructions at each succeeding level of the organization should be more detailed, more specific and more tailored to particular applications) is put out a directive that we tried to make equally applicable to the Department of Defense on one hand, the Consumer Products Safety Commission and all the other departments and agencies in between. So it doesn't answer all of the questions and many questions, we know, will arise.

To a considerable extent, those can be answered by your own departments and agencies in their implementing instructions. The Department of Defense has been working very energetically with us during the development of our revised Circular A-76, and since it was issued, in developing their implementation. DoD Directive 4100.15 and DoD Instruction 4100.33 will continue to be the basic Department of Defense implementing documents, and under these each of the Services



will have its own: Army's AR 235.5, Air Force Manual 26-1, and I've never been able to remember the number of the Navy instruction, but there is a NAVMAT Instruction that provides the Navy's implementation.

Let me just talk about the policy in general and then I'll try the best I can to respond to any specific questions you may have relative to its applicability to library services and the library field.

This policy has a very lengthy history--goes all the way back to the immediate post-World War I period, and concern exhibited by the Congress over the extent to which the Government at that time, primarily the military part of the executive branch, had gotten involved in various kinds of activities that could be done in the private sector. They were, in fact, competitive with private sector operations. The Army had its coffee-grinding factories, the Navy had its own rope walk up in Boston, where they manufactured their own ropes. The Navy also had its own dairy at Annapolis, that survived as long as Mendel Rivers survived in Congress. These were some of the early examples that were highlighted of the Government getting involved in things that were purely commercial and industrial in nature.

There were quite a few studies and reports by different special and standing committees of the Congress, some of them leading to the First and Second Hoover commissions, which did in-depth studies on what the Government should and should not be doing, and came up with very extensive recommendations on how to get the Government out of businesses that were competitive with the private sector. Well, this legislative background led to a number of proposals to place this general policy in law, each of which was abandoned at the last minute when the administration rushed over and testified, as administrations are always wont to do, "There's no need for this legislation. We are implementing the policy administratively." So in 1955, the administration finally got around to promulgating a government-wide directive enunciating this policy. The Bureau of the Budget (BoB), which preceded our present Office of Management and Budget, issued a Bulletin in 1955 that enunciated the general principle that the Government should not compete with the private sector, and any activity being done in the Government that could be done in the private sector should be very carefully reviewed; and unless there was some compelling reason for continuing, they should be discontinued, and the agency should rely on the private sector for those goods and services. This Bulletin was revised in 1957 and 1960 and in March 1966, OMB Circular A-76 was first issued. It expressed the same general policy, provided general guidelines to agencies on how to go about implementing it, delegated all responsibility for implementation to the agencies; and virtually nothing happened, which is what you could imagine in this Government of ours, which has its unique ways of maintaining the status quo and following tradition, and more or less ignoring transient political influences that pass through Washington.

So, as time went on, and occasionally someone in the private sector would say, "Hey, what is this OMB Circular A-76? It says you agencies shouldn't be doing such things." And they would be quickly pushed aside and hushed up. But in 1969, Congress passed a law that called



for an in-depth review of all aspects of government procurement, and in the hearings that preceded that law, someone comes up and says, "Hey, how about having this commission take a look at the policy of Government's reliance on the private sector? That has supposedly been in effect since 1955 and there's been relatively little indication of anyone's taking it seriously out there." So, as the Commission was set up, this topic was included on its agenda. I happened to work for 2 years with the Commission on Government Procurement, as vice-chairman of the particular study group that reviewed this subject. We took a look at what agencies had been doing in regard to this policy, and helped to develop some recommendations that the Commission made to the Congress. In this specific area, the Commission recognized that, although we'd had this policy in writing since 1955 there was very little indication of implementation by any of the agencies. DoD had done far more than anyone else, but even DoD had applied it only when it was convenient or useful, or they felt it would serve a purpose. But there really had been no comprehensive, consistent, effective effort throughout the Government to implement this policy, and the Commission recommended that such an effort should be undertaken.

The Commission also recommended that there needed to be a central office of federal procurement policy somewhere in government, to provide overall guidance to agencies on procurement policy and to monitor procurement regulations and practices. So, for once, the Congress heeded the recommendations of a Commission and passed Public Law 93-400. In August 1974, it was signed into law and established the Office of Federal Procurement Policy, placed it in the Office of Management and Budget with an administrator appointed by the President, confirmed by the Senate, reporting to the Director of OMB, and with a number of functions and responsibilities, one of which was to monitor and revise as necessary, policies, procedures and regulations relating to the Government's reliance on the private sector for goods and services. I joined the new office in March of 1975 with the prime responsibility to see what we could do about getting this policy better implemented throughout the Government. We went to work on it with our best efforts, put as much pressure as we could on agencies to get better implementing instructions, to set up some review cycles, to start looking for better cost estimates of things that they were doing in-house.

For purposes of later contract, just let me sort of re-emphasize what the policy expression was in Circular A-76 that was in effect at that time. The Circular simply said, "It is the policy of the Government to rely on the private sector for goods and services that are available from a private source. Any deviation from that is an exception that must be justified. Contracting out is in compliance with the policy, requires no support, requires no justification, but in-house performance must be justified on the basis that there is (1) no commercial source available, (2) use of a commercial source would delay or disrupt an agency program, (3) in-house performance is necessary to insure military readiness and mobilization preparedness, or (4) it's more economical to do it in-house than going to the private sector." Well, this was a rather strong policy preference toward the private sector, perhaps too strong, and we found a great deal of



resistance to its effective implementation throughout the Executive Br. As we began to get into some very controversial issues like comparative cost analysis, and what is the true cost to the Government for the Civil Service Retirement Program, we came up with some more realistic numbers than the ones that had been used in the past by agencies. They had used only the agency contributions to the Civil Service Retirement System, which is 7% of salary. Actual cost of the program includes the additional very substantial sums of money which are paid out of general treasury funds directly into the Civil Service Retirement Fund each year to make up for the fact that there are general increases, there are cost-of-living increases for retirees, and there have been a number of benefit increases over the years to Civil Service Retirement. We found that the cost of the Government was, at a very conservative estimate, near 20% of salary rather than 7% of salary. When we issued an amendment to A-76 requiring the inclusion of these cost factors, it produced a predictable response from federal employee organizations, and members of Congress who had heavy concentrations of federal employees in their districts.

As the new administration came into office in early 1976, they were met with a great deal of clamor, controversy, and conflict over this policy. Their reaction was predictable administration logic. That is, "We support the general policy that the Federal Government should rely on the private sector, but we don't understand this OMB Circular A-76. We weren't here when it was written. It's not our document. Therefore, we're going to do a comprehensive review of the Circular and its implementation and see what we can do to change it, to make it into a directive that we can say, 'This is ours, we support it and we intend to see it properly carried out.'" So in June of 1977, we announced a comprehensive review of the Circular. We requested input, comments, and recommendations from all interested parties, and we received quite a few from all directions of the spectrum. We went through a very elaborate analysis of the comments, drafted up a new Circular, put that out for comment, got another broad range of comments which we very carefully considered. We recognized during the study that one of our major problems was coming up with a method of getting a reliable, predictable, and dependable comparison of relative costs between having a particular product or service provided by contract and providing it in-house with government people.

As we worked with ways of coming up with an enforceable policy, we found that in order to get the kind of support that we needed--universal support throughout the Congress and Executive Branch--we needed to put more emphasis on relative cost. Very few people will stand up and argue that the Government should do things in-house that can be done by contract with substantial savings and at the same level of performance and quality. It's very difficult to argue against converting an in-house activity to contract if you can get the same product or service at substantially less cost. So we put a great deal more emphasis on relative cost in the revised Circular, but this created a dilemma of also coming up with a way of insuring more accurate, dependable and reliable cost comparisons than we'd ever had in the past. The cost comparison guidelines of the old Circular were rather brief, and agencies have, to the limited extent that they had performed any cost comparisons, had to come up with their own way of



implementing them, which left a great deal of room for question as to their accuracy. So we convened an interagency group of cost accounting experts from half-a-dozen different agencies, and put them to work preparing a cost comparison handbook. I think they did an outstanding job of coming up with a draft handbook that we published for comments in September of last year, and then finalized and issued along with the revised Circular in March of this year. It provides a pretty detailed set of guidelines, and if you sit down and work through it, you can come up with a comparative cost analysis that you can defend against any kind of criticism. The basic approach being that, number one, you've got to have a reliable cost figure for contract performance. In the past we found many cases where agencies had estimated the cost of commercial performance, estimated the cost of in-house performance, and "proved" it's much cheaper to do it in-house. They hardly proved it to the satisfaction of potential contract performers, however. So under the new system now, the only way you can develop a commercial cost figure is to go out and solicit competitive bids. Write a comprehensive work statement of exactly what is to be done, go out and solicit competitive bids or proposals to do the work; then, selecting the lowest responsible responsive bidder, you compare that with an in-house estimate prepared in accordance with the detailed handbook that we have. If converting to contract will result in savings equal to at least 10% of your estimated Government personnel cost, then you convert to contract performance. If contract performance will not result in that much savings, you don't convert to contract performance--you continue to do it in-house.

This has had already, in the early stages of implementation, a couple of unanticipated benefits. One was demonstrated in probably the first competitive cost analysis that was conducted under the revised Circular A-76. This was a study that the Treasury Department did in their New York Assay Office for refining gold, which is clearly a commercial activity. There are a lot of gold refiners out there in the private sector that can take impure gold and refine it to whatever standard of purity you want. So the Office of Management and Budget wanted to close down this refinery operation, which just happens to be in lower Manhattan on some very expensive real estate that would have quite a bit of value to the Government if not occupied by the New York Assay Office. We convinced them, though, that they did have a chance to continue operating if they could show it's more economical to do it there, under our new Circular A-76, than if they were to contract it out. So they undertook a study, and in the process of their study found that they could reduce the manning at this Government facility from 220 down to 160 people and simultaneously increase their output by 25%. They reduced the cost of refining gold from \$1.67 an ounce down to \$1.21 an ounce and just barely squeaked under the commercial price for refining it. So they justified continuing the refining operation in New York City. But it also resulted in a substantial savings to the Government and to the taxpayer in the cost of refining gold, and reduced the manpower in the Department of Treasury to help them get under their Leach Amendment personnel ceiling.

The Air Force down at Keesler AFB, Mississippi, did an A-76 review of its audiovisual activity. They found out they could run it with 45 people instead of 78 people, and by doing so, they were able to get



the cost of running it in-house just a little bit below the contractor's low bid. So there are some side benefits to A-76, in that even when you don't contract out and same money, frequently you can continue to perform in-house and save money. It's amazing how efficient Government operations suddenly can become when they are faced with extinction! Its a much more pleasant alternative than disappearing.

This is really the driving force in efficiency in the private sector--competition. If you're not competitive enough to compete with your competition in the private sector, you go bankrupt. This is the first time that any government agency has ever been exposed to anything that is at all parallel to the situation of bankruptcy in the private sector, and it's had quite an effect on a number of people.

The other unanticipated benefit from A-76 is that the rigors of the process require that to begin a cost comparison, you have to sit down and write a comprehensive work statement of exactly what is to be done. Many Government agencies have never done this. They have just gone along from day to day doing a lot of things because they always used to do it, or somebody asked for this report one time and no one ever told them to stop making it, and there's really no reason for a lot of the things that are being done in Government activities. But when you sit down and write out a detailed contract work statement, someone is going to question, "Why are we doing this?" and if there's no reason for doing it, you eliminate it. You come up with a detailed work statement of exactly what needs to be done, go out and solicit bids on the basis of that work statement, estimate your in-house performance on the basis of doing exactly what's in that work statement, with the most efficient manning and approach that you've come up with, and then have a comparative cost analysis between the two. But the discipline of the procurement process has caused a lot of people to realize that they were doing unnecessary and marginally valuable things in Government, and the more of these that we can eliminate, the more efficient Government will inherently become.

We made a number of other changes in the revised Circular, but I don't want to use up all the time so we don't have time for questions. Let me just hit a few of the high points on that, and then pause to respond to any specific questions or problems that you might want to raise.

We tried to come up with a much more balanced approach than was in the original Circular A-76. For example, we re-phrased the policy statement. Instead of saying "It is the policy to rely on the private sector. Any in-house performance has to be justified as an exception," we broke it down into a three point statement. We said, "Yes, after due review and consideration and reflection, we have reconfirmed the basic policy that the Government should rely on the private sector for goods and services, and it's really not appropriate for the Government to be in business just for the sake of being in business. However, there are certain things that are inherently governmental in nature and these things must be done by Government employees." A-76 rules are just as firm that governmental functions must be done in-house as they are that commercial and industrial activities must be properly considered for performance in the private sector. It's difficult to come up with a simple definition of a governmental function,



but the two underlying key points are that anything that involves the independent exercise of governmental authority, the discretionary application of governmental authority, is definitely a governmental function and should be done by a Government employee. And, secondly, anything that involves value judgments on behalf of the Government should be done by a Government employee. Now, someone who is either elected by the people or is selected in accordance with procedures that have been established for determining the selection of people to work for the taxpayer, should make these decisions that are going to have an impact on him. So those activities in Government that inherently involve either the discretionary application of Government authority or value judgment on behalf of Government (we do spell out some examples in the Circular) are the kinds of things that should be carved out, reserved specifically for in-house performance.

It has been my observation, from many years of looking at this policy and its implementation and nonimplementation in various agencies, that we have entirely too many cases of agencies contracting out things that they should be doing in-house and then doing in-house things that they should be contracting out, and it's come about primarily because of tradition. An agency is doing the things that they have employees on board with the skills to do. If an agency has people with the skill to repair automobiles, they repair their own automobiles, but if they have some sophisticated studies to be made in air defense concepts, they go out and set up an aerospace corporation as a think-tank to do these kinds of studies and help in this kind of high level policy formulations. It's simply a matter of day-by-day following traditions and practices in various agencies that has led us to where we are today; and then, when agencies try to go out and hire some of the high level people that they need to help with the policy they hear, "Sorry, you are over ceiling--you can't have any more employees." Well, you've got thousands of employees out there doing blue-collar work that in most cases could be done more economically by competitive contract, but they have tied up their resources and their personnel space with doing the wrong kinds of things, so they can't do the right kinds of things. So this is a shift that we're hoping to make with proper implementation of A-76.

I don't look at it as being anti-Federal employee--I look at it as upgrading the Federal employee, because it's aimed at making the average Federal employee a much more important, much higher-level, a management type of person rather than a "doing" type of person. It's consistent with what we have always considered to be the proper role of government. The role of government is to govern, not to manufacture pencils and repair automobiles and sweep floors and guard buildings--but to govern, to make policy, to come up with solutions to our domestic problems, to come up with solutions to our foreign policy and our relations with other countries. These are the kinds of things that Government should be concentrating on, and to the extent that we can contract for commercially available goods and services, it has more opportunity to devote its attention and interest to its basic role of governing. So that's part of the philosophical rationale behind it, but further in our revision, and we were extremely anxious, as I say, to come up with a more balanced approach to the whole issue, we included a number of things that were specifically designed to show



this Administration's concern and consideration for the Federal employee that could be affected by this. This was one of the very strong complaints against the old Circular, that it showed no concern whatever for the displaced Federal employee when something is contracted out.

So we've done a number of things in the revised circular. First, we are requiring each agency to schedule in advance and publish when each of its in-house activities is going to be reviewed over the next three years, so there are no surprises of walking into work one day and hearing, "Oh, by the way, your job's gone. It's been contracted out." Every potentially affected Federal employee will know sometime in the next three years, and approximately when in that next three years, his particular activity is going to be studied under the Circular. We're also requiring that the results of all reviews be publicly available upon request by any interested parties; that is, the details of the inventory, the schedules, the results of any reviews or decisions already made, will be available without going through the hassle or rigors of the Freedom of Information Act. It's just simply your right as an affected party to go into the agency and ask for any information that you want concerning the agency's implementation of this program.

Secondly, when the specific studies are undertaken and a cost study is done, everyone who is potentially affected will be notified, copies of the solicitation for bid and work statements that go out will be available to all interested parties, and any deficiency in that comparative cost analysis that anyone can find can be reported to the official responsible for conducting the study, and will be immediately considered and corrected if it is indeed an error, insuring that the comparative cost analysis is done completely, correctly and in accordance with the cost handbook.

Now, once the decision is made either to continue doing this activity in-house or to do it by contract, there is an appeals process which each agency is required to establish, that will consider any appeals that are brought by an affected party, by a Federal employee or a Federal employee union that is affected if something's going to be contracted out, by a contractor if he feels that the study has inappropriately resulted in a decision to continue in-house performance. This appeals process is designed to give a rapid but objective review by an official of the agency at equal or higher level than made the original determination. I was talking to people working on the GSA study today and at GSA, the Administrator has decided that he himself is going to be the appeal authority. He's going to look at every A-76 appeal that comes in and make the final decision on it. Well, that's potentially a tremendous work load when you look at an agency like GSA that has over 10,000 different commercial and industrial activities that have to be studied over the next 3 years. But when you get that kind of high-level agency attention and interest, then we think we have a policy and a program that's going to go somewhere.

Now, in the event that an activity is converted from in-house to contractor performance, we have made reference in Circular A-76 to the directive that was put out jointly by Mr. McIntyre, (Director of OMB) and Mr. Campbell when he was chairman of the Civil Service Commission,



that provided certain considerations that would be given to any employee whose job was eliminated through reorganization, restructuring, program changes, contracting out and a variety of other changes. First, maximum consideration will be given to placing him elsewhere with the Government in a comparable job with the same or a different agency, to the extent of even paying for relocation costs and re-training costs to a reasonable level, if necessary, to help him fit into another job within the Government. That memo also requires establishing special priority programs for placement within the Government for any displaced employees. A requirement that we have put in the new Circular, that will be incorporated in any contract that is issued for work that has been converted to contractor performance, requires the contractor to give a "right to first refusal" of employment to any displaced Government employee before he can hire from any other source to man that contract. Additional efforts are made through OPM and Department of Labor to insure that anyone who is still not placed comes up with satisfactory employment in the private sector, if they are unable to find a job for them with the Federal Government.

We feel that these new provisions in the Circular do demonstrate the Administration's real concern for the Federal employee and his interests, while keeping it in proper perspective with the Administration's concern and obligation for assuring the taxpayer that Government operations are going to be done in an economical, efficient way. And if a particular function that is being done in-house can be done by contract with savings of 10% of the personnel-related cost or more, then it will be converted to contract. If it can't, it will continue to be done in-house.

Now, to respond to some other criticism that was directed against A-76, which is that it has always been a unilateral document directed toward Government in-house activities, we have provided in the revised circular that not only will you look at your in-house activities to see if contract performance will be more economical, but you'll also look at things done by contract to see if they might be more economically done in-house. If so, you will convert them from contract to in-house performance. And if this creates a personnel ceiling problem, then this will be considered by OMB in the context with other agency plus and minus personnel requirements in adjusting your overall personnel ceiling. This is a commitment that was not made lightly. That final provision was put in the Circular after three meetings that I sat in personally with Jim McIntyre and John White, our Deputy Director, our General Counsel and a couple of the other Assistant Directors of OMB. Recognizing full well that there could be situations in which some fairly large activities now being done by contract could be shown to be more economical if performed in-house, OMB is committed to come up with the personnel spaces from somewhere to permit that new in-house operation.

So this is part of the balance that I say we're trying to put into the program, to insure that we not only look at in-house activities, but also look at contract activities and try to do everything in the most economical possible way.



Well, that's my pitch up to this point, so I'd like to stop at this juncture, if I may, and see what specific comments, questions, brickbats, or whatever you might have.

Question: If, in fact, the civil servant is picked up by the contractor, they lose their civil service status, seniority and all that. Am I right?

Mr. Russell: I'm not a personnel expert, but I understand that anytime you leave Civil Service, you always have the option of coming back with the same seniority.

Comment: No, but I mean you'd no longer be a Government employee.

Mr. Russell: That's right. You'd no longer be a Government employee; you'd be an employee of the contractor.

Comment: With a seniority of zero and back at Square 1. The other thing I wanted to ask you is my own personal observation is (you were saying for example, motor pool activities were usually more economical done on contract) that these are the people usually most strongly unionized. Do you expect a fight from the unions on this?

Mr. Russell: Well, we have certainly been getting fights from the unions for quite some time on a variety of fronts. Every major legal initiative they have mounted has failed. The major success they received in a legal area was a suit they filed over some contracts that NASA had at Marshall Space Flight Center in Huntsville, Alabama. They had some general program reductions, so they were reducing Civil Service employees, reducing contracts, and the Civil Service Employees Union went in and said, "You should throw the contracts out completely so you wouldn't have to RIF any of the Civil Service employees." That suit was filed in December of '67, and after batting around the District Courts and being thrown out and going to Appeals Court and remanded for hearing on its merit and those kinds of things, finally there was ruling in 1977 referred to as the Waddy decision in favor of the union. In essence, it said, "You're right. These jobs should be done by Federal employees. Reinstate these people. Give them 11 years back pay. Cancel all contracts like this that NASA has." Well, the Government naturally appealed this ruling and the Circuit Court of Appeals reversed the whole thing. The issue was one of personal versus nonpersonal service, which is really the extent to which contractor employees are supervised by and therefore are "de facto" employees of the Government. The Appeals Court ruled that only if there's relative close continuous direct supervision of contractor workers by Federal officials does this personal service issue arise. The union appealed to the full Circuit Court of Appeals of the District of Columbia, and got a unanimous turn down by all nine judges. They then appealed to the Supreme Court which refused to hear the case and let the Appeals Court ruling stand, and that was the final ruling on that one. There have been half a dozen other cases that have been ruled on at the District or Appeals Court level which have ruled that the Government has complete authority to contract out functions of this type. The other union initiative has been legislative, and there they've had some limited success by getting minor restrictions put



into various DoD appropriation and authorization bills--annual legislation from time to time. There is a provision in the House-passed version of the FY 80 Defense Authorization Bill that would require DoD, before converting anything from in-house to contract, to do impact studies on the community, impact studies on the Defense mission and submit copies of their comparative cost analysis to the House and Senate Armed Services Committees and wait 30 days before awarding a contract. Now what's happened to that in conference, I do not know. The conference started a couple of weeks ago, but I guess was interrupted by the House's recess. The only thing we did hear was the 30-day waiting requirement had been eliminated, so a contract could be issued without delay. So these kinds of things are done by the unions and their lobbying efforts through the Headquarters, as well as through individual union members and locals around the country with representatives in Congress and others.

Question: How realistic is this 10% figure?

Mr. Russell: Well, the Air Force has had a great deal more experience in doing cost comparisons by the general approach that we have decreed in the new Circular A-76. In fact, we got the idea from the Air Force because they started almost 10 years ago using the firm bids to get commercial costs. Now, I recently looked at some data from the Air Force. Over several hundred studies that they had done, about 90% of those studies resulted in conversion to contract performance with savings running all the way from 10% to 50% from the cost of doing it in-house.

Question: I have a question concerning one statement you made. You said when studies are undertaken, everybody will be notified, and I was under the impression that when a cost analysis is completed that would be made available to all. Will the cost analysis be made available to a contractor prior to the submission of a bid?

Mr. Russell: Definitely not. I said when studies are being initiated, everybody will know. They'll know a study is being done. But no contractor will see the in-house cost estimate until after his bid has been submitted, the bids have been opened and are public property.

Question: This is something that's come up with the morale support side of the house when we were talking about this and this is how to treat nonappropriated fund costs when you are working on your cost analysis. Is this to be reported out? We've had some conflicting instructions as to whether to count these as cost to Government because it is not appropriate funds. It's a problem some people are facing right now.

Mr. Russell: It's a good question that has not been raised to us. I would certainly like to look at it. I wouldn't want to give an off-the-cuff response to it. I do know, for example, in areas where we are talking about nonbudget funds of a particular agency, we are certainly concerned with cost to the Government whether it came out of that particular agency's budget or not, and where an agency has a revolving fund set up, and it's selling services to other agencies and



crediting them into an industrial funding type of account, then we insist that all those funds that are used be accounted for in the study. Nonappropriated funds get us into such things as running commissaries (running of commissaries involves both appropriated and nonappropriated funds), bowling alleys, tailor shops, things of this sort, and I don't think we have really taken a position on that.

Question: Some of our activities may have up to 30 to 40% of their current operating budget go to personnel and materials. Could you comment on this?

Mr. Russell: These are some problems that we would expect DoD to wrestle with, because this nonappropriated fund is primarily a DoD problem, and if they want some advice or guidance on it, to come to us and we'll give them a position.

Question: About this "right of first refusal"-- would you elaborate on that a little bit--for example: a contractor must offer displaced Federal employees jobs first. How far does that go? Then does the employee have any further protection? What if someone is hired by a contractor and fired a week later?

Mr. Russell: Well, if someone was fired a week later, I'm sure the contractor would have to come up with a very good reason for doing it. The contracting officer now is responsible for enforcing this, because it's a provision in the contract, and any such patent effort to circumvent it by giving it lip service would certainly be something a contracting officer would follow up on.

Question: Would that require an appeal being filed by the employee?

Mr. Russell: Certainly a contracting officer would have to be aware that it had occurred. Someone would have to get to the contracting officer to make it know, but he would be in a position to exercise his basic authority as a contracting officer to get corrective action of any violation of the intent of the terms of the contract itself.

Question: They can't be fired?

Mr. Russell: Certainly. If, let's say, a contractor takes over some function and hires some Federal employees, and one of these guys turns out to be a real trouble-maker, a malcontent, he punches the boss in the mouth or something like that, you've got to have the right to fire him. You can't require the contractor to continue to employ him if he doesn't do his job. But, on the other hand, you've got to protect him from any arbitrary dismissal just to have complied with some general contractual provision, though I expect that's something that will have to be worked out on a case by case basis.

Question: Is there any protection in this against vital activities being shut down when operated by contractors?

Mr. Russell: This has been raised as a potential problem, but even though we've had very extensive reliance on contracts by the old



Atomic Energy Commission (then ERDA, now DOE) and NASA and the Air Force, there have been no real problems in the past. For example, the Air Force has relied on contractors to completely run the Distant Early Warning line across Canada, the big Ballistic Missile Early Warning System and all of their missile ranges since their original inception, and there has never been an interruption to operations of any of these activities over the last 30 years. There have been isolated strikes here and there, but the contractor has the basic responsibility to keep the thing going. I know while I was with RCA they had a strike of engineers at the Ballistic Missile Early Warning System site up in Alaska, so they just simply rounded up enough engineers in the company from various divisions, carried them up there and kept the thing going for a few weeks until they settled the dispute and got everybody back on the job.

Question: That would be considered a breach of contract if they didn't keep it going?

Mr. Russell: Yes, it would be a failure to perform. So if the contractor has the resources and is a responsible contractor, he is responsible to keep going even if he has some minor labor disputes.

Question: I remember a few years ago the Postal Service was closed down by an illegal strike--you know you simply can't round up enough people who are not union members to run the Postal Service. In fact, if you choose the wrong industry and it's large enough, you cannot find a contractor who is so substantial as you describe.

Mr. Russell: It all depends. But the point you brought out is that doing it in-house is no guarantee against strikes interrupting operations. The Comptroller General of the General Accounting Office put out a report several years ago in which they detailed 20 some odd work interruptions of different types by Federal employees over the last 5 years and warned agencies "You'd better prepare some contingency plans to contend with strikes by Federal employees because there's certainly indications that they are increasing." So I don't see a great deal of difference in potential strike threat between doing things on contract and doing them in-house. It's a problem either way.

Question: To what extent is the contractor required to do things in the same manner as the Government worker did? For instance, while we were writing our statement of work, the first set of instructions was, "We don't want a detailed description of how you do it, only what you do--like catalog books, and acquire periodical subscriptions. The contractor may not catalog by the Dewey Decimal System like you do. He can do it his own way as long as he catalogs the collection." Well, the statement came back, saying, "You can't just say 'Acquire books'; you have to specify. When do you use a purchase order? When do you go by blanket purchases agreement? Where do you have deposit slips?" Well, it seems to me this becomes crucial when the Government bid is prepared, because the Government organization may be bidding on pears, and the contractor may be bidding on apples. To what extent is he going to be required to deal with Defense Supply Services, Washington, or can he go to Brentano's to buy his books, or what's what?



Mr. Russell: Well, what we are recommending here is that you include in the statement of work all essential elements of the end product. That is, what are your standards of performance? What does he have to do? If you have to have these books cataloged by the Dewey Decimal System, then you specify that they've got to be cataloged by the Dewey Decimal System. You don't specify how they're going to be done. He can subcontract it to somebody; he can do it on an automated system using a computer; or he can do it manually with a bunch of people sitting in a room. That's why we say to insist in a work statement that essential things, the "whats" be there but not the "hows." We don't want to wind up specifying in such detail the way that it's going to be done that we're really defining the contractor's work force for him and not giving him an opportunity to use any initiative, ingenuity or any innovative ways of getting to the right end product.

Question: One of our statements that came back was really general. It said, "make the book accessible to the public." You could hawk it on a corner, or have people come in by random access.

Mr. Russell: No, you can clearly specify that they've got to be displayed appropriately on racks, and the library's got to be open certain hours of the day and anything essential to make certain that they are properly available, so as to serve the same need that the library has been serving in the Government operation, but you shouldn't say that you will use a 3x6 ft. cart to carry the books around and put them upon the shelves--I mean little details of that nature.

Comment: Well, you would never guess from this revised draft that we had a card catalog, or a computer-produced book catalog or anything. They wanted it all on card file and reduce the basics, and it's okay anyway, you can make any kind of a bid on that. Unfortunately, that wasn't the final draft, but it's been greatly confused about to what extent we say how we do it. Dewey Decimal is not an only system that can be used. We may feel like using Library of Congress or Universal Decimal System or our own and to what extent do we go out and practice the same thing when the Government presents its bid?

Mr. Russell: You've got a library system here, full of books already cataloged by the Dewey Decimal System. A contractor coming in and bidding on running that library is going to find it most economical to bid on the basis of continuing to use the Dewey Decimal System, not going back and reclassifying all the books that are already there. They can be reasonably sure the contractor's going to bid on the most economical approach to do the job. So they are not going to come in and completely change the system to something much less appropriate or something that your people are not accustomed to working with.

Comment: It becomes crucial in the acquisition process. For instance, I could do a better, quicker and cheaper job if I could deposit \$25,000 at Brentano's. I'd run right up there and buy what I need instead of it taking 6 months for a book through Defense Supply Service, Washington. Maybe I should bid on it.

Mr. Russell: You should probably run some things by contract.



Question: To follow on to the question I asked earlier. Assuming a situation where a government operation goes to contract, then in subsequent review goes back to the Government, are there requirements to hire the contractor personnel?

Mr. Russell: None whatsoever. Civil Service's rules and regulations provide the circumstances under which people will be hired by the Government. Now, one major program back in the middle sixties, the Department of Defense undertook a program to convert some 10,000 contract positions to in-house performance. At that time they got a special dispensation from the Civil Service Commission to offer Civil Service employment to any incumbent contractor personnel, and that is possible now under the current system. If you've got a large program, it would be appropriate, it would avoid disruption, you would be able to switch over, you can request a special dispensation from OPM and there's a good possibility that if you make a strong enough case for it, that it would be granted. But there's nothing in Revised Circular A-76 that says they would do that, because that's outside our purview. In the Office of Federal Procurement Policy we control procurement policy and what can go under a contract, but we have absolutely nothing to say about what goes in Civil Service Personnel Regulations about employment practices and procedures.

Question: Is there any hope that in the outcome to this will be perhaps a lessening of the rigidity of the various procedures, regulations, etc., that we have to follow now in-house, because this, in fact often, is a big contributing factor why we are performing as inefficiently as we are in certain areas.

Mr. Russell: I think it will--I think when we get a few more of these studies on record, it's going to highlight the impact of some of these procedures and some of these rigidities, and I think it's going to result in some change to accomplish this, but to take one example: Vance AFB, Oklahoma, is entirely run by a contractor. The contractor does all the maintenance on the base, he does all the food service, the aircraft service, furnishes and services all the motor vehicles including all the flight line emergency vehicles, he runs the Officer's Club, the NCO Club, the VOQ, the enlisted visitor's quarters, the base purchasing office, everything except actual flight training. There are military flight instructors and military students. Now this base, according to several studies done by the Rand Corporation over the last 15 years, is operated at about 20% less cost than five other flight training bases that the Air Force has, with approximately the same level of students to be trained, that are run by more conventional Air Force methods. Out of this have come a number of points. What has the contractor done differently to be more efficient? They've got a union there and they are paying their people in most cases more, individually, than the Government does, but he uses fewer people, because he's got a group of people there that during the summertime, mow grass. During the winter time they wash equipment and do other things. They've got a lot more flexibility in their utilization of their people. If they have a small job over here that needs some electrical work, some plumbing work and some carpentry work, he doesn't



put three different people over there to work about 2 hours a day on the average, he puts one guy over there that does all three things. Under Civil Service regulations, it's very difficult, if not impossible, to do that. If the guy is an electrician, he can do electrical work; if he's a plumber, he can do plumbing work; but a contractor can hire a jack-of-all-trades who can do all three. So there are a lot of these things that are coming to light now in the flexibility that contractor's have that the Government doesn't have that enables the contractor to be more efficient in doing a lot of these tasks, and it could result in changing some of our rigid Government systems.

Question: If a decision is made to do something in-house, how long does that decision hold?

Mr. Russell: Five years. It must be reviewed again within 5 years.

Question: Then a contractor can't come in the next year with a lower bid?

Mr. Russell: A contractor can come in the next year with a lower price and if the agency elects to consider that unsolicited proposal, it's possible that they could, but it would not be scheduled to come up for review. I wouldn't want to say that if any agency is doing something in-house and a contractor comes in with an unsolicited proposal that shows he can do it at half price, that the agency would be precluded from considering that proposal.

Question: But they'd have to do another in-house study?

Mr. Russell: Right. They'd have to do another study to compare it. But the basic requirement is that all in-house activities must be reviewed within 3 years, and then if they're approved for continuation must be reviewed again within 5 years, and so on for the future.

Question: What's going to happen if a contractor elects to quit in 2 years, or 1 year?

Mr. Russell: Well, the Government then would have the option of going out and soliciting bids and awarding a new contract or considering re-establishing the in-house activity.

Question: What if services are not proper?

Mr. Russell: Well, if you do a proper job in the procurement process, and the whole thing that's necessary to make A-76 work is that we've got to do a good job in the procurement process; if you properly screen the contractors that you're looking at, there's very little likelihood that they're going to just quit, or walk off the job or go bankrupt or give up.

Question: Will it occasionally happen?

Mr. Russell: Well, it does. You have to be able to spot someone who is not responsible.

Question: How has classified and/or limited information been affected by this? Has this been a problem in any form?

Mr. Russell: No ma'am. We have taken the position in A-76 that the fact that an activity involves classified information does not in and of itself constitute justification for doing it in-house, because we have such a tremendous history of successful performance of classified programs by contractors. Virtually everything that the Atomic Energy Commission has done, starting with the Manhattan Project that created the first atomic bomb, was done completely by contractors, appropriately safeguarding classified information.

Question: But there haven't been any problems with limited information--where one contractor doesn't want his limited information given out?

Mr. Russell: Not to the best of my knowledge. This has always been handled by an appropriate provision in the contract. The contractor's people who are involved in that contract will not make that information available to anyone else, including anyone in it's own company that does not have an appropriate need-to-know or are authorized to have access to it. We haven't had a problem on that point to my knowledge.

Question: Is the top range 3 years for the contract, from the date it's written?

Mr. Russell: No ma'am. Not necessarily. A great deal of Government contracting is with annual appropriated funding and they are limited to 1-year contracts that they can award. However, what you can do and what we advocate is, that in your solicitation you ask for a 1-year contract price, plus priced options for additional years which can be exercised then at the discretion of the Government--if performance has been satisfactory, if you feel that the price is going to be reasonable when the first year is up, you can authorize one or two additional options with that contractor to continue the performance.

Question: I have some concern about the changes with changing contractors.

Mr. Russell: Yes, it certainly is disruptive if you were to recompet every year and turn over the contract every year. Now, there are some funds that are multi-year money. Most research and development funds are multi-year money and contracted for longer periods. That's how NASA can contract for 3 years and one or two renewal options in some of their support contracts. The Army's White Sands Proving Ground, where they are dealing with R&D money, can similarly contract for multi-year contracts. Also overseas there's a special provision for multi-year contracts, even though it's with annual money.

Question: I'd like to go back to Huntsville to the case you said that when the contract first went over, they were supervised by Federal employees. In the Longworth program, this is a specialized thing. Would that mean there would be no supervision, or no professional librarian would be permitted to go and look to see what was done--say a Command Librarian? Would they be permitted to go to the post or



base to look to see if the contract were carried out?

Mr. Russell: Absolutely, that would be monitoring contract performance. What it means is that a Government official should not come in and tell someone who is working how to pick this book up and put it on that shelf. There's a contractor manager there who's responsible for supervising contractor employees. But the Government official can communicate to the contract manager anything that's to be done under the contract. That manager, in turn then, gives the directions to the workers; and to come in and look at what is being done, to monitor and check it, that is a very appropriate function of the Government contract monitor.

In response to a discussion of contracting out Federal libraries, Mr. Russell responded: As far as conversions under A-76 is concerned, if your annual cost of running an activity is less than \$100,000, then you can contract for it without doing a cost study. But you can also write your work statement on the basis of how that library should be done, go out and contract for it, and the contractor might put three people in there and run it right--the way you'd like to have it run and you'd get better support out of your library.

Comment: But the cost to the Government has increased.

Mr. Russell: It could, but if you're getting a commensurate increase in quality out of it in performance, it could well be worthwhile doing it that way. If not, you could write your work statement in such a way.

Comment: In that sense the Government could never win, if you allowed that same principle to apply in any amount.

Mr. Russell: But we don't. It's only under \$100,000 that you can contract out, without doing a comparative cost analysis.

Comment: Which means that something on the order of 80%, or perhaps 70% of all Federal contracts are in that category and that's that.

Mr. Russell: Well, under the Circular, in any case where the agency feels that contract cost would be unreasonable, due to lack of competition or any other reason, they can do a comparative cost analysis, even if it's under \$100,000.

Question: Who's going to open the bids and award the contract?

Mr. Russell: The Contracting Officer will, with technical advice from the technical element of the Command. This is the way it's normally done with minor variations.

Comment: That's sort of self-serving, though. If the Contracting Officer is a librarian-type, you're not entirely unbiased and . . .

Mr. Russell: That's a possibility you'd have to consider in a case like that. In most cases our procurement people, though, are just basically procurement people. They don't have other disciplines. It

takes them long enough just to try to learn procurement work. I have to admit that there are some people currently providing procurement who are not fully qualified. Well, the whole process is going to be subject to appeal if it's not done properly. This biased procurement officer makes a decision that's unfairly unfavorable to a contractor, he's going to be in there yelling through the appeals process, and someone much higher up in the agency is going to be looking down to see if what went on was justifiable, and vice versa. So we hope to keep everybody honest through the appeals process.

Question: Your circular says, "Contracted out to a private source," but in a library case, not many constituencies would be interested in bidding on it, except perhaps other governmental authorities--counties, cities, etc. Have you had these bidding?

Mr. Russell: One of the things that we've really taken a lot of flack over with this revised circular from the private sector is the definition of private source. If you'll look back in the beginning, there's a definition of private source. We define it as any business organization or other non-Federal activity. A state or local government or a state university is for the purposes of this Circular, a private source and therefore free to bid on any of these activities. We have a manpower question?

Question: You were talking earlier about the study made in New York City where they suddenly found they could operate with fewer people. Who got those personnel spaces, Treasury Department or OMB?

Mr. Russell: We have not had in the past a rigid system of pulling back personnel spaces everytime an agency reorganizes and saves a few spaces. OMB has found that in order to give agencies some incentive to try to reorganize and better do things here, to let them have those personnel spaces to use elsewhere in the agency. But if you have a large action, let's say you convert something involving several thousand people to contract, the OMB budget examiner will be looking over your shoulder wondering where those Federal spaces are going to go.

Comment: In 60% of the cases, we found using people working for the Government instead of under contract decreased the cost--there's something wrong there--I'm not quite sure what it is. It's a one-man operation.

Mr. Russell: It's one of the many places probably where the personnel ceiling squeeze has restricted the development of a Government activity to what it otherwise would have been. If you've got a need there for more than one person, if it weren't for personnel ceilings, you'd probably have more than one person there working.

Comment: On the other hand, it could be super-efficiency.

Mr. Russell: If you're getting what you want. If you're getting the service and you write the job description so it could be met by your current one-man work force, then a contractor's going to come in and bid on the basis of doing it with one person at a comparable cost.



Question: This is sort of related to what he had to say. I think most of us have heartburn with procurement as such. What makes us think that suddenly in contractual work with potential outside contractors this same procurement place that's so inefficient to work for on a day-to-day basis is going to become very efficient?

Mr. Russell: That's a good thought. That's the job of the Office of Procurement Policy. A major responsibility of the Office is to make all Federal procurement more economical, more effective and more efficient. Now, we haven't done that yet. We've been in business for 5 years with a lot of help and a little bit of hindrance from a lot of people here and there. We've worked at it for some time. We do have a lot of things under way, though, that we think are going to contribute significantly toward achieving that goal. We have established the Federal Acquisition Institute which is tackling, among other things, the problem of having adequate numbers of adequately qualified procurement people to meet all of the Government's procurement requirements. They've done some extensive studies to determine what is needed; they've set up a new progression of career fields; done very slow and tedious negotiations with the Civil Service Commission (now OPM) and they are setting up appropriate levels of training and certification for procurement people. We think this is going to significantly upgrade the procurement work force. We are also working on a complete new set of integrated Federal Procurement Regulations that will replace the hundreds of different sets of procurement regulations that we have in the Executive Branch today, and this work is at least in the first draft stage, according to the latest report I heard, at least 75% completed. As we get each section done, we're getting it finalized as quickly as we can. With some luck we could have this new procurement regulation out before the end of next year. With the new procurement regulation, with the work that we're doing with the Congress in developing a new procurement statute, and with the work we're doing on upgrading the procurement work force, we think we are going to be able to make Federal procurement more economical, more efficient and more effective than it has been in the past. It's not something you do overnight, as we've discovered, and not something you do in a few years.

Question: Then that means this won't be done in the 3-year period?

Comment: They say contractors are going to be coming in.

Mr. Russell: There have been some substantial improvements made in a number of areas already.

Question: Then it will be negotiated in terms of procurement authorization?

Mr. Russell: Now, there's a bill introduced by Congressman Harris that would take all of the individual flexibility out of it. It would require that in any case where you contract out for something, you are immediately docked the number of personnel spaces it would take to do that work in-house; and if you do a cost study saying it would be cheaper to do it in-house, you are immediately given the number of personnel spaces necessary to do it. The bill, H.R. 4717, has been



the subject of hearings here recently. It does not appear to be going anywhere anytime soon, but the way it's written, that anytime an agency awards a grant or a contract or a sub-contract under a grant or a sub-contract under a contract is awarded, they would have to report within 10 days to OMB the number of Federal employees it would take to do that work, and have this subtracted from their personnel ceilings. HEW says, "We put out eight billion dollars worth of grants every year. If you figured up how many people it would take to do that work in the Government and took that off our personnel spaces, we'd be out of business."

Question: Might agencies award contracts solely for the purpose of saving personnel ceilings? I have guidelines coming down through Command channels, saying, "I know you're going to be taking cuts over the next 2 or 3 years. Here's a case where you can save spaces by contracting out. We're going to give you credit for them. Nobody ever questions the money you get. You can get the money, but you can't get people. So they're saying, "You drive this thing through and you contract every single thing you can out, regardless of whether it's a good idea or not." Somehow, go out there and prove it's cost effective so we can save those spaces for the next few years." That's what our people are being told. It doesn't make good sense to me.

Mr. Russell: I spent a couple of hours being cudgeled by Congressman Harris on this very point a week or so ago, and I had two answers for him. Number one, the new Circular A-76 was not applicable to the Department of Defense until 1 October, by act of Congress. Section 814 of the FY 79 Defense Authorization Bill mandated that the Department of Defense follow their regulations on contracting out that were in effect prior to 30 Jun 76, until 60 days after they submitted a report to Congress explaining changes made to the rules that were in effect back then. Well, DoD couldn't start writing their report until we put our new circular out the end of March. They didn't finish it so they could put it into Congress until the 31st day of July, which made the 60-day period coincide with the end of the fiscal year when that stipulation would have expired anyhow. We have not accused them of any design in the timing of that, but the net result is that the new circular was not effective in DoD until 1 October, and we have explained to the good Congressman that while there will always be somewhere out there in the slightly less than 2 million people that work for the Executive Branch, people that will say things that are not proper, even people in some management positions. It is very strongly the position of this Administration that no agency will contract out for the purpose of meeting personnel ceilings; however, they will review their in-house activities, and when it is more economical to do them by contract, they will contract out regardless of personnel ceilings. Now, if this assists them in living with more stringent personnel ceilings, then that is a serendipitous benefit. Now, we feel that under the old circular which said, "You won't contract out to avoid personnel ceilings but you will contract out as policy," there was no way you could challenge an agency for contracting out anytime--no justification was required. But under the new circular, to convert something from in-house to contract, if it costs more than \$100,000.00



a year, you've got to justify it with a cost comparison that shows it will result in enough savings to overcome that differential. But agencies now have the latitude to contract out.

Question: Where they get that latitude is they say--"You can't put that under a contract."

Mr. Russell: If it's not in the contract, you're not required to include it in your in-house cost estimate either. If you do, you're not in compliance with Circular A-76, and your unions can file an appeal through the appeals process and you can have all kinds of problems over that study. I guess I've run out of time.



EXECUTIVE OFFICE OF THE PRESIDENT

OFFICE OF MANAGEMENT AND BUDGET

WASHINGTON, D.C. 20503

March 29, 1979

CIRCULAR NO. A-76

Revised

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Policies for Acquiring Commercial or Industrial Products and Services Needed by the Government

1. Purpose. This Circular establishes the policies and procedures used to determine whether needed commercial or industrial type work should be done by contract with private sources or in-house using Government facilities and personnel. This Circular replaces OMB Circular No. A-76, dated August 30, 1967, and all subsequent amendments.

2. Background. In a democratic free enterprise economic system, the Government should not compete with its citizens. The private enterprise system, characterized by individual freedom and initiative, is the primary source of national economic strength. In recognition of this principle, it has been and continues to be the general policy of the Government to rely on competitive private enterprise to supply the products and services it needs.

This policy has been expressed in Bureau of the Budget Bulletins issued in 1955, 1957, and 1960. In 1966, Circular No. A-76 was issued and, for the first time, prescribed the policy and implementing guidelines in a permanent directive. The Circular was revised in 1967, by Transmittal Memorandum No. 1, to clarify some provisions and to lessen the burden of work by the agencies in implementation. Transmittal Memorandum No. 2 was issued in 1976, providing additional guidance on cost comparisons and prescribing standard cost factors for Federal employee retirement and insurance benefits.

In 1977, a comprehensive review of the Circular and its implementation was initiated. Transmittal Memorandum No. 3 was issued on June 13, 1977, announcing the review and temporarily reducing the Government retirement cost factor. This revision is the result of that review and careful consideration of comments from all interested parties.

3. Responsibility. Each agency head has the responsibility to ensure that the provisions of this Circular are followed. This Circular provides administrative direction to heads of agencies and does not establish, and shall not be construed to create, any substantive or procedural basis for any person to challenge any agency action or inaction on the basis that such action was not in accordance with this Circular, except as specifically set forth in Section 11 below.



An interagency committee jointly sponsored by the Office of Federal Procurement Policy and the Office of Science and Technology Policy, has been established under the Federal Coordinating Council for Science, Engineering, and Technology, to study these issues and recommend guidelines for appropriate and uniform agency implementation. Supplemental guidance addressing R&D activities will then be developed and, after public review and comment, be issued as an amendment to the Circular. In the interim, compliance with this Circular and the periodic review of inventoried R&D activities are to be deferred for one year pending completion of the study, except for new starts and expansions, as defined in the Circular. Additional guidance will be provided on determining justified "core capability" and applying the policy to other R&D requirements to assure that essential in-house capability is maintained, and that the Government and taxpayers' interests are properly considered in contract versus in-house decisions.

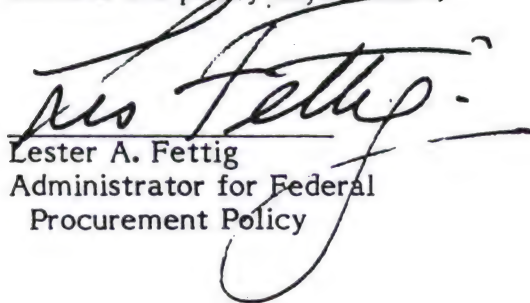
#### Government-Owned Contractor-Operated Activities

Government-owned, contractor-operated (GOCO) activities were excluded from prior issuances of the Circular. A comprehensive review of all GOCO activities is necessary to determine whether they can be completely treated under the terms of this Circular. In the interim, this Circular is to be applied only to new starts and expansions of Government-owned equipment and facilities.

#### Personnel Ceilings

The relationship between Circular A-76 and agency personnel ceilings was reviewed in some detail and clarified in the Circular. While it is clearly specified that agencies will not use the Circular to contract out solely to meet personnel ceilings, it is equally clear that agencies will contract out when justified under the Circular regardless of the relationship between personnel levels and authorized ceilings. Conversely, contracts for activities that are shown to be justified for in-house performance will be terminated as quickly as in-house capability can be established; when the additional spaces required cannot be accommodated within the agency's personnel ceiling, a request for adjustment will be submitted to OMB in conjunction with the annual budget review process.

The Office of Management and Budget will monitor agency implementation of this revised Circular, providing guidance and interpretations as required. Further revisions and supplements will be issued as necessary in the future to achieve the policy objectives.

  
Lester A. Fettig  
Administrator for Federal  
Procurement Policy

  
James T. McIntyre, Jr.  
Director



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4. Policy. This policy builds on three equally valid policy precepts:

a. Rely on the Private Sector. The Government's business is not to be in business. Where private sources are available, they should be looked to first to provide the commercial or industrial goods and services needed by the Government to act on the public's behalf.

b. Retain Certain Governmental Functions In-House. Certain functions are inherently governmental in nature, being so intimately related to the public interest as to mandate performance by Federal employees.

c. Aim for Economy; Cost Comparisons. When private performance is feasible and no overriding factors require in-house performance, the American people deserve and expect the most economical performance and, therefore, rigorous comparison of contract costs versus in-house costs should be used, when appropriate, to decide how the work will be done.

5. Definitions. For the purposes of this Circular:

a. A "Government commercial or industrial activity" is one which is operated and managed by a Federal executive agency and which provides a product or service that could be obtained from a private source. A representative, but not comprehensive, listing of such activities is provided in Attachment A. An activity can be identified with an organization or a type of work, but must be (1) separable from other functions so as to be suitable for performance either in-house or by contract; and (2) a regularly needed activity of an operational nature, not a one-time activity of short duration associated with support of a particular project.

b. An "expansion" is the modernization, replacement, upgrade, or enlargement of a Government commercial or industrial activity involving additional capital investment of \$100,000 or more, or increasing annual operating costs by \$200,000 or more; provided, the increase exceeds 20% of the total investment or annual operating cost. A consolidation of two or more activities is not an "expansion" unless the proposed total capital investment or operating cost exceeds the total from the individual activities by the amount of the threshold. An expansion which increases either capital investment or annual operating cost by 100% or more is a "new start."

c. A "conversion" is the transfer of work from a Government commercial or industrial activity to performance by a private commercial source under contract.

d. A "new start" is a newly-established Government commercial or industrial activity, including a transfer of work from contract to in-house performance. Also included is any expansion which would increase capital investment or annual operating cost by 100% or more.

e. A "private commercial source" is a private business, university, or other non-Federal activity, located in the United States, its territories and possessions, the District of Columbia, or the Commonwealth of Puerto Rico, which provides a commercial or industrial product or service required by Government agencies.

f. A "Governmental function" is a function which must be performed in-house due to a special relationship in executing governmental responsibilities. Such governmental functions can fall into several categories:

(1) Discretionary application of Government authority, as in investigations, prosecutions and other judicial functions; in management of Government programs requiring value judgments, as in directing the national defense; management and direction of the Armed Services; conduct of foreign relations; selection of program priorities; direction of Federal employees; regulation of the use of space, oceans, navigable rivers and other natural resources; direction of intelligence and counter-intelligence operations; and regulation of industry and commerce, including food and drugs.

(2) Monetary transactions and entitlements, as in Government benefit programs; tax collection and revenue disbursements by the Government; control of the public treasury, accounts, and money supply; and the administration of public trusts.

(3) In-house core capabilities in the area of research, development, and testing, needed for technical analysis and evaluation and technology base management and maintenance. However, requirements for such services beyond the core capability which has been established and justified by the agency are not considered governmental functions.

## 6. Scope.

a. No executive agency will engage in or contract for commercial or industrial activities except in accordance with the provisions of this Circular, or as otherwise provided by law, including, for example, Title 44 of the U.S. Code.



b. The implementation provisions of this Circular do not apply to governmental functions as defined in paragraph 5(f). These functions must be performed in-house by Government personnel.

c. This Circular applies to the need for Government ownership in any "new start" or "expansion" of a Government-owned, contractor-operated (GOCO) facility.

d. Additional provisions are as follows:

(1) This Circular does not provide authority to enter into contracts. Guidelines governing contracts for goods and services are set forth in applicable acquisition regulations.

(2) This Circular will not be used as authority to enter into contracts which establish a situation tantamount to an employer-employee relationship between the Government and individual contract personnel. Additional guidance on this subject is provided in the Federal Personnel Manual issued by the Office of Personnel Management.

(3) This Circular will not be used to justify a conversion to contract solely to meet personnel ceilings or to avoid salary limitations. When in-house performance of a "new start" is justified under this Circular but cannot be accommodated within agency personnel ceilings, an appeal for necessary adjustment to implement this Circular agency-wide should be made to OMB in connection with the annual budget review process.

(4) Major system acquisitions are governed by the provisions of OMB Circular No. A-109, "Major System Acquisitions." Reliance on the private sector is one of the general policies contained in Circular A-109 to ensure competitive consideration of all alternatives before making a decision as to the best method of satisfying an agency mission need.

(5) This Circular does not apply to consulting services of a purely advisory nature relating to the governmental functions of agency administration and management and program management. Assistance in the management area may be provided either by Government staff organizations or from private sources, as deemed appropriate by executive agencies, in accordance with executive branch guidance on the use of consulting services.

(6) This Circular applies to printing and binding only in those agencies or departments which are exempted by law from the provisions of Title 44 of the U.S. Code.

(7) This Circular should not be applied when it would be contrary to law or inconsistent with the terms of any treaty or international agreement.

7. Use of Products and Services from Other Federal Agencies.

a. Excess property and services available from other Federal agencies should be used in preference to new starts or contracts, unless the needed product or service can be obtained more economically in the private sector. This is consistent with the Federal Property and Administrative Services Act of 1949 and related regulations.

b. When a commercial or industrial activity operated by an agency primarily to meet its own needs has excess capacity, that capacity can be used to provide products or services to other agencies.

(1) If a formal program is established for managing excess capacity, such as the ADP sharing program operated by GSA, capacity that has been reported as excess can be used by other agencies with no further justification. In the absence of a formal program and report of excess capacity, another agency's use of a Government activity must be justified in accordance with paragraph 8 of this Circular. When the cost justification is used, the agency requiring the product or service will solicit competitive bids or proposals to establish commercial costs, and award a contract when more economical. The prospective providing agency will prepare the Government cost estimate, in accordance with this Circular, for comparison with the commercial cost.

(2) It is not intended that agencies create or expand capacity for the purpose of providing commercially available products or services to other agencies. When the performing agency's own requirements increase, capacity used to support other agencies is no longer excess and should be used in preference to acquisition of additional capability. Consequently, agencies should not expand a commercial or industrial activity which is providing products or services to other agencies. The user agency (or agencies) should be informed, with sufficient notice to arrange alternative sources, that the support will be terminated unless exceptional circumstances prevent that agency from finding a new source.

c. In some cases, a commercial or industrial activity is operated for the primary purpose of providing a product or service to other agencies, such as the Federal Data Processing Centers or the Office of Personnel Management training centers. All such activities must be reviewed under this Circular to determine whether continued Government operation is justified. The review should be made at the earliest possible date, but under no circumstances later than October 1, 1981. Prior to that review, agencies may use the products and services available without further justification. When continued Government operation of the activity is approved, agencies may use the products or services provided, up to the level of capability approved, with no further justification. When expansion of such an activity is proposed, the justification for approval under this Circular can be based on the entire workload, including work for other agencies.



8. Government Operation of a Commercial or Industrial Activity. Government operation of a commercial or industrial activity may be authorized under one of the following conditions.

a. No Satisfactory Commercial Source Available.

(1) A Government commercial or industrial activity can be authorized without a comparative cost analysis when it is demonstrated that:

(a) There is no private commercial source capable of providing the product or service that is needed; or

(b) Use of a private commercial source would cause an unacceptable delay or disruption of an essential agency program.

(2) Before concluding that there is no private commercial source capable of providing the needed product or service, the agency must make all reasonable efforts to identify available sources.

(a) As a minimum, the agency must place at least three notices of the requirement in the Commerce Business Daily over a 90-day period. In the case of urgent requirements, publication in the Commerce Business Daily can be reduced to two notices over a 30-day period.

(b) Agencies' efforts to find satisfactory commercial sources, especially small and minority-owned businesses, should include obtaining assistance from the General Services Administration, Small Business Administration, and the Domestic and International Business Administration in the Department of Commerce.

(3) A conclusion that use of a commercial source would not be satisfactory because it would cause an unacceptable delay or disrupt an agency program requires a specific documented explanation.

(a) Delay or disruption must be spelled out specifically in terms of cost, time and performance measures.

(b) Disruption must be shown to be of a lasting or unacceptable nature. Transitory disruption caused by conversions are not sufficient grounds.

(c) In all cases, specific explanations must be documented. If it is known that the function has been performed by contract elsewhere or at another time, the justification must specify why circumstances are substantially different.

(d) The fact that an activity involves a classified program, or is part of an agency's basic mission, or that there is a possibility of a strike by contract employees is not an adequate justification for in-house performance of that activity. Urgency by itself is not an adequate reason for starting or continuing a Government commercial or industrial activity. It must be shown that commercial sources are not able and the Government is able to provide the product or service when needed.

b. National Defense.

(1) A Government commercial or industrial activity, operated by military personnel, may be justified when:

(a) The activity or military personnel assigned are utilized in or subject to deployment in a direct combat support role;

(b) The activity is essential for training in those skills which are exclusively military in nature; or

(c) The activity is needed to provide appropriate work assignments for career progression or a rotation base for overseas assignments.

(2) A Government commercial or industrial activity providing depot or intermediate level maintenance may be justified in accordance with criteria approved by the Secretary of Defense to ensure a ready and controlled source of technical competence and resources necessary to meet military contingencies. These criteria will limit the extent of in-house capability and capacity within the military departments for depot and intermediate maintenance support of mission-essential equipment to the minimum necessary to accomplish that objective. Justification under these criteria will require a detailed explanation, on a case-by-case basis, why the needed capability cannot be supplied by:

(a) A private commercial source; or

(b) Contract operation of Government-owned facilities.

Such justification must be approved at the military department assistant secretary level or equivalent in the defense agencies.

c. Higher Cost. A Government commercial or industrial activity may be authorized if a comparative cost analysis, prepared in accordance with paragraph 9 of this Circular, indicates that the Government can provide or is providing a product or service at a lower total cost than if it were obtained from a private commercial source.



9. Cost Comparisons. A decision for in-house performance based on economy must be supported by a comparative cost analysis prepared in accordance with this Circular and the supplementing Cost Comparison Handbook.

a. Common Ground Rules.

(1) Both Government and commercial cost figures must be based on the same scope of work and the same level of performance. This requires the preparation of a sufficiently precise work statement with performance standards that can be monitored for either mode of performance.

(2) Standard cost factors will be used as prescribed by the Cost Comparison Handbook and as supplemented by agencies for particular operations. It will be incumbent on each agency to defend any variations in costing from one case to another.

(3) Cost comparisons are to be aimed at full cost, to the maximum extent practical in all cases. All significant Government costs (including allocation of overhead and indirect costs) must be considered, both for direct Government performance and for administration of a contract.

(4) In the solicitation of bids or offers from contractors for workloads that are of a continuing nature, unless otherwise inappropriate, solicitations should provide for prepriced options or renewal options for the out-years. These measures will guard against "buy-in" pricing on the part of contractors. While recompetition also guards against "buy-ins," the use of prepriced or renewal options provides certain advantages such as continuity of operation, the possibility of lower contract prices when the contractor is required to provide equipment or facilities, and reduced turbulence and disruption.

(5) Ordinarily, agencies should not incur the delay and expense of conducting cost comparison studies to justify a Government commercial or industrial activity for products or services estimated to be less than \$100,000 in annual operating costs. Activities below this threshold should be performed by contract unless in-house performance is justified in accordance with paragraph 8.a. or b. However, if there is reason to believe that inadequate competition or other factors are causing commercial prices to be unreasonable, a cost comparison study may be conducted. Reasonable efforts should first be made to obtain satisfactory prices from existing commercial sources and to develop other competitive commercial sources.

(6) The cost comparison will use a rate of 10% per annum as the opportunity cost of capital investments and of the net proceeds from the potential sale of capital assets, as prescribed in the Cost Comparison Handbook.

b. Calculating Contract Costs.

(1) The contract cost figure must be based on a binding firm bid or proposal, solicited in accordance with pertinent acquisition regulations. Bidders or offerors must be told that an in-house cost estimate is being developed and that a contract may or may not result, depending on the comparative cost of the alternatives.

(2) The factor to be used for the Government's cost of administering contracts, in addition to other costs of using contract performance as specified in the Handbook, is 4% of the contract price or expected cost.

c. Calculating Costs of Government Operation.

(1) Each agency should assure that Government operations are organized and staffed for the most efficient performance. To the extent practicable and in accordance with agency manpower and personnel regulations, agencies should precede reviews under this Circular with internal management reviews and reorganizations for accomplishing the work more efficiently, when feasible.

(2) The Government cost factor to be used for Federal employee retirement benefits, based on a dynamic normal cost projection for the Civil Service Retirement Fund, is 20.4%.

(3) The Government cost factor to be used for Federal employee insurance (life and health) benefits, based on actual cost, is 3.7%.

(4) The Government cost factor to be used for Federal employee workmen's compensation, bonuses and awards, and unemployment programs is 1.9%.

d. An existing in-house activity will not be converted to contract performance on the basis of economy unless it will result in savings of at least 10% of the estimated Government personnel costs for the period of the comparative analysis.

e. A "new start" will not be approved on the basis of economy unless it will result in savings compared to contract performance at least equal to 10% of Government personnel costs, plus 25% of the cost of ownership of equipment and facilities, for the period of the comparative analysis.

f. All cost comparisons must be reviewed by an activity independent of the cost analysis preparation to ensure conformance to the instructions in the Cost Comparison Handbook.



## 10. Administering the Policy.

### a. Implementation.

(1) Each agency will designate an official at the assistant secretary or equivalent level, and officials at subordinate contact points for major components, to have overall responsibility for implementation of this Circular within the agency.

(2) Each agency will establish one or more offices as central points of contact to maintain cognizance of specific implementation actions. These offices will have access to all decision documents and data pertinent to actions taken under the Circular and will respond, in a timely manner, to all requests concerning inventories, schedules, reviews, and results of reviews. In considering requests which include information supplied by contractors or prospective contractors, agencies will be guided by OFPP Policy Letter No. 78-3, "Requests for Disclosure of Contractor-Supplied Information Obtained in the Course of a Procurement."

(3) Within 90 days after the date of issuance, each agency will promulgate this Circular, with the minimum necessary internal instructions, identifying the designated official and the central and subordinate contact points. When issued, copies of the internal instructions will be forwarded to OMB's Office of Federal Procurement Policy for review. Copies of subsequent changes will also be forwarded for review.

(4) Each agency will recognize that work for the Federal Government may be performed by use of military personnel, civilian employees, and contract services, and that past experience demonstrates that all three methods have been responsive and dependable in performing sensitive and important work.

(5) Each agency will ensure that contracts awarded as a result of reviews under Circular A-76:

(a) Contain all applicable clauses and provisions related to equal employment opportunities, veterans' preference, and minimum wages and fringe benefits, including implementation of OFPP Policy Letter No. 78-2, dated March 29, 1978, relating to "wage busting;"

(b) Include a provision, consistent with Government post employment conflict of interest standards, that the contractor will give Federal employees, displaced as a result of the conversion to contract performance, the right of first refusal for employment openings on the contract in positions for which they are qualified;

(c) Are awarded to a responsible and responsive bidder or offeror, as required by applicable acquisition regulations; and

(d) Are administered and monitored to achieve proper performance, using appropriate contractual remedies any time performance is less than satisfactory.

(6) Each agency will exert maximum effort to find suitable employment for any displaced Federal employees, including:

(a) Giving them priority consideration for suitable positions with the Government;

(b) Paying reasonable costs for training and relocation when these will contribute directly to placement;

(c) Arranging for gradual transition when conversions are made to provide greater opportunity for attrition and placement; and

(d) Coordinating with the Department of Labor and other agencies to obtain private sector employment for separated workers.

(7) Each agency will provide for alterations to the mode of performance to be timed in consonance with, and adjusted for, the budget process to the extent required and consistent with the firm bid cost study approach.

b. Inventories. Each agency will immediately compile a complete inventory of all commercial and industrial activities subject to this Circular.

(1) Agencies will prepare and maintain a complete inventory of all individual commercial or industrial activities (as defined in paragraph 5.a.), which they operate. In addition to general descriptive information, the inventory should include for each activity: the amount of the Government's capital investment, the annual cost of operation, the date the activity was last reviewed, and the basis on which the activity is being continued under this Circular. The inventory will be updated at least annually to reflect the results of reviews as conducted.

(2) Agencies will also prepare and maintain an inventory of all contracts in excess of \$100,000 annually, except those awarded under a duly authorized set aside program, for services which the agency determines could reasonably be performed in-house, including any activities that have been converted from in-house to contract performance. In addition to general descriptive information, the inventory will include: the contract number, name of the contractor, contract period, period of any options, and the total contract price or estimated cost. Inventory updates will reflect exercise of options and the termination and award of contracts.



c. Reviews. Agencies will prepare a detailed schedule for the review of each commercial or industrial activity and contract in the inventory to determine if the existing performance, in-house or contract, continues to be in accordance with the policy and guidelines of this Circular. The flow chart provided as Attachment B demonstrates the sequence of actions required for proper implementation of the Circular.

(1) The schedule for review of in-house commercial and industrial activities will provide for review of all activities during the three-year period following issuance of this revised Circular. Consideration should be given first to criteria that do not concern cost. Unless continuation is justified under paragraphs 8.a. or b., a cost comparison must be conducted to determine the relative cost of Government and private performance.

(2) The schedule for review of contracts will show the date that each contract (including options) will expire, and the date that the requirement will be reviewed to determine if contract performance is to be continued. The agency will review the contract cost and determine whether it is likely that the work can be performed in-house at a cost that is less than contract performance by 10% of Government personnel costs plus 25% of the cost of ownership of equipment and facilities. When this is determined to be likely, a cost comparison will be conducted.

(3) Both schedules will be completed and provided to the Office of Federal Procurement Policy, OMB, within 120 days of the date of issuance of this Circular. These schedules will be made available by the agency to all potentially affected employees and their representatives, and published for the information of contractors.

(4) Reviews will be conducted in accordance with the schedules, unless it is determined that a change in the schedule will be in the best interest of the Government. In such cases, after approval by the agency head or his designee, the schedule can be revised with 60 days notice to all affected parties.

(5) After the initial review, activities approved for continuation will be reviewed again at least once every five years. When it is determined by the agency head or his designee that the circumstances which supported the initial approval are not subject to change, subsequent reviews may be waived. These activities will be retained in the inventory, however, and so identified. A copy of the justification and the waiver will be made available to all interested parties upon request to the agency contact point.

(7) When the number of commercial and industrial activities and the number of covered contracts is so great that reviews cannot be completed in the prescribed time period, the agency may request approval from the Office of Federal Procurement Policy, OMB, to schedule the reviews over a longer period.

d. New Starts.

(1) A new start should not be initiated by an executive agency unless the justification for establishing the activity under the provisions of this Circular has been reviewed and approved by a senior official of the agency. A new start which involves a capital investment or annual costs of \$500,000 or more must be approved by the agency head or by an official at the assistant secretary or equivalent level.

(2) The actions to be taken under this Circular should normally be completed before the agency's budget request is submitted to OMB. Data in support of such budget requests will be submitted in accordance with OMB Circular No. A-11. In the case of a proposed new start involving a major capital investment where the item to be acquired requires a long lead time (e.g., ADP system, building), approval of budget resources will not constitute OMB approval of that method of meeting the agency need. A final determination to initiate the new start or to rely on a private commercial source, within the resources approved, will be made in accordance with this Circular and other applicable policies, prior to any commitment to a particular acquisition strategy.

(3) When Government ownership of facilities is necessary, the possibility of contract operation must be considered before in-house performance is approved as a new start. If justification for Government operation is dependent on relative cost, the comparative cost analysis may be delayed to accommodate the lead time necessary for acquiring the facilities.

(4) When in-house performance to meet a new requirement is not feasible, or when contract performance would be under an authorized set-aside program, a contract can be awarded without conducting a comparative cost analysis.

e. Set-Aside Programs

(1) It is the general policy of the Government, as expressed in the Small Business Act, to ensure that small businesses, including those owned and managed by disadvantaged persons, receive a fair share of Government contract awards.

(2) Consequently, contracts awarded under authorized set-aside programs will not be reviewed for possible in-house performance. Additionally, new requirements which would be suitable for award under a set-aside program should be satisfied by such a contract without a comparative cost analysis.

(3) On the other hand, in-house activities (in excess of \$100,000 annually) will not be considered for performance under a set-aside contract except when the conversion is justified by a comparative cost analysis.



## 11. Appeals.

a. Each agency will establish a procedure for an informal administrative review of determinations made under this Circular. This procedure will only be used to resolve questions of the determination between contract and in-house performance, and will not apply to questions concerning award to one contractor in preference to another contractor. Upon written request from a directly affected party raising a specific objection, the appeals procedure will provide for:

(1) An independent, objective review of the initial determination and the rationale upon which the decision was based.

(2) An expeditious determination, within 30 days, made by an official at the same or higher level than the official who approved the original decision.

b. The appeals procedure is to provide an administrative safeguard to assure that agency decisions are fair, equitable, and in accordance with established policy. This procedure does not authorize an appeal outside the agency or a judicial review.

c. Since the appeal procedure is intended to protect the rights of all affected parties -- Federal employees and their representative organizations, contractors and potential contractors, and contract employees and their representatives -- the procedure and agency determinations may not be subject to negotiation, arbitration, or agreements with any one of those parties. Agency decisions are final.

d. Agency appeal procedures, when issued, will be submitted to OFPP for review pursuant to paragraph 10.a.(3).

## 12. Effective Date.

This Circular is effective May 1, 1979, but need not be applied to studies in process where a solicitation for contract bids or proposals was issued prior to the effective date.

Questions or inquiries about this Circular or its implementation should be addressed to the Office of Federal Procurement Policy, OMB, telephone number (202) 395-7207.

  
Lester A. Fettig  
Administrator for Federal  
Procurement Policy

  
James T. McIntyre, Jr.  
Director

EXAMPLES OF COMMERCIAL AND INDUSTRIAL ACTIVITIES

Audiovisual Products and Services

- Photography (still, movie, aerial, etc.)
- Photographic processing (developing, printing, enlarging, etc.)
- Film and videotape production (script writing, direction, animation, editing, acting, etc.)
- Microfilming and other microforms
- Art and graphics services
- Distribution of audiovisual materials
- Reproduction and duplication of audiovisual products

Automatic Data Processing

- ADP services -- batch processing, time-sharing, etc.
- Programming and systems analysis, design, development, and simulation
- Key punching and data entry services
- Systems engineering and installation
- Equipment installation, operation, and maintenance

Maintenance, Overhaul, and Repair

- Aircraft and aircraft components
- Ships, boats, and components
- Motor vehicles
- Combat vehicles
- Railway systems
- Electronic equipment and systems
- Weapons and weapon systems
- Medical and dental equipment
- Office furniture and equipment
- Industrial plant equipment
- Photographic equipment
- Space systems

Systems Engineering, Installation, Operation, and Maintenance

- Communications systems -- voice, message, data; radio, wire, microwave, and satellite
- Missile ranges
- Satellite tracking and data acquisition
- Radar detection and tracking
- Television systems -- studio and transmission equipment, distribution systems, receivers, antennas, etc.
- Recreational areas
- Bulk storage facilities



### Manufacturing, Fabrication, Processing, and Packaging

- Ordnance equipment
- Clothing and fabric products
- Liquid, gaseous, and chemical products
- Logging and lumber products
- Communications and electronics equipment
- Rubber and plastic products
- Optical and related products
- Sheet metal and foundry products
- Machined products
- Construction materials
- Test and instrumentation equipment

### Real Property

- Design, engineering, construction, modification, repair, and maintenance of buildings and structures
- Construction, alteration, repair, and maintenance of roads and other surfaced areas
- Landscaping, drainage, mowing and care of grounds

### Industrial Shops and Services

- Machine, carpentry, electrical and other shops
- Industrial gas production and recharging
- Equipment and instrument fabrication, repair and calibration
- Plumbing, heating, electrical, and air conditioning services, including repair
- Fire protection and prevention services
- Custodial and janitorial services
- Refuse collection and processing

### Health Services

- Surgical, medical, dental, and psychiatric care
- Hospitalization, outpatient, and nursing care
- Physical examinations
- Eye and hearing examinations -- manufacturing and fitting glasses and hearing aids
- Medical and dental laboratories
- Dispensaries
- Preventive medicine
- Dietary services
- Veterinary services

### Transportation

- Operation of motor pools
- Bus service
- Vehicle operation
- Air transportation
- Water transportation
- Trucking and hauling

### Printing and Reproduction

- Printing and binding -- where the agency or department is exempted from the provisions of Title 44 of the U.S. Code
- Reproduction, copying, and duplication
- Blue-printing

### Research and Development

- Basic research
- Applied research
- Development
- Concept formulation and demonstration
- R&D studies
- R&D testing
- R&D support services

### Office Services

- Stenographic recording and transcribing
- Word processing/data entry
- Mail/messenger
- Translation
- Information systems and distribution
- Financial auditing and services
- Management auditing

### Security

- Guard and protective services
- Systems engineering, installation, and maintenance of security systems and individual privacy systems
- Forensic laboratories



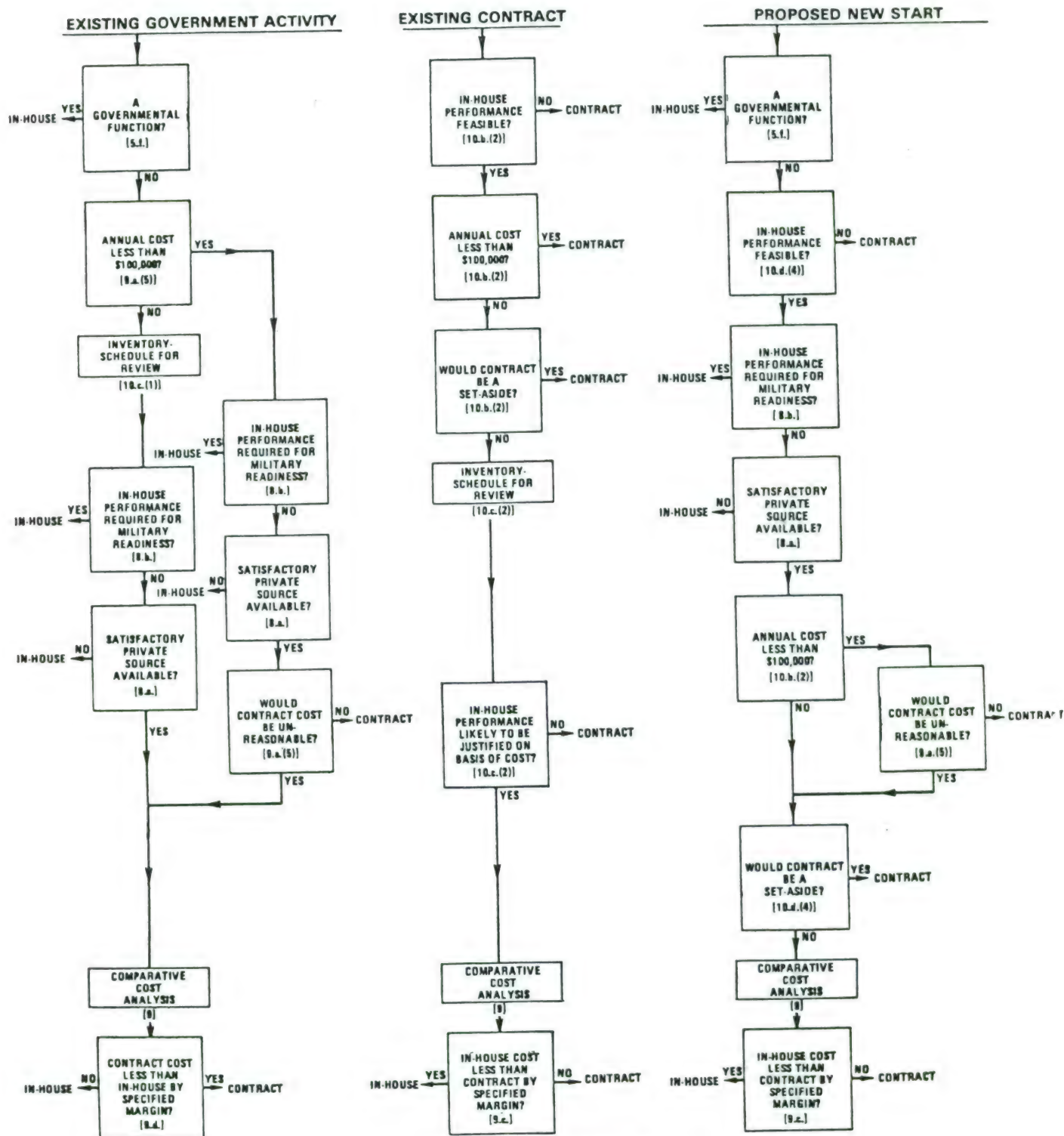
### Food Services

Operation of cafeterias, mess halls, kitchens, bakeries, dairies,  
and commissaries  
Vending machines  
Ice and water

### Other Services

Laundry and dry cleaning  
Library operation  
Mapping and charting  
Architect and engineer services  
Geological surveys  
Cataloging  
Training - academic, technical, vocational, and specialized (within  
the limitations of P.L. 85-507, unless waived by the Office  
of Personnel Management)  
Operation of utility systems (power, gas, water, steam, and sewage)

## IMPLEMENTATION OF OMB CIRCULAR A-76



Reference in brackets is to appropriate paragraph in Circular A-78



## CONTRACTING OUT LIBRARIES' SERVICES IN THE 1990s

### Task Group 1

Mr. Marcotte: Would someone want to make a recommendation that this committee could endorse, that this should be a continuing topic of a task group within the Military Librarians' Workshop for the next two or three years, due to the intense interest?

Response: I so move.

Response: I second the motion.

Comment: I would like to suggest that we have a three-fold plan to form a basis to call on if we need help in filling out forms for studies, and also to get a stronger voice and united voice at a higher level. That would have more impact.

Comment: I'd like more DoD Instructions, this type of thing, that would give us wider input or viewpoint.

Miss Driscoll: Since we've been collecting this for three years, we'll be glad, if you want to recommend it, to be a repository for copies of contracts and other documents whether planned or completed, because we'd like to carry on with what we've been doing, and also make it easier for the rest of the DoD library community to get this material. We'll be glad to keep the file, reproduce contracts at request, and send them out to you. I don't believe we can supply any guidance in specific situations, however. You must rely on your own management for this.

Comment: Ms. McMahon: I'd like to go back to what we were talking about early this morning. Air Force did insert something on contract libraries in Chapter 2 of the newly revised Library Program Regulation (AFR 215-15.) It states contract operated libraries will be assigned an account number and operate according to this regulation.

Mr. Marcotte: This is a pretty strong statement. Do we have the final wording for a recommendation: I have, "Recommend to the Program Committee that contracting as a Task Group be continued as long as needed at the Military Librarians' Workshop." Is that acceptable wording? Now for discussion. All in favor, say "aye," opposed "no." None opposed -- that's good.

A second recommendation that was mentioned but not put in the form of a motion was, "Recommend that Headquarters, AFSC, Miss Driscoll's office, keep a master file of contracts or other documents related to contracts for libraries, to be available to any group or individual who wants to use them.

Comment: Do you want to make this recommendation to Military Librarians' Division, SLA? They are the sponsoring organization.

Mr. Marcotte: I don't have any idea where the recommendation's going to end up.

Miss Driscoll: We'd like to continue to collect these.

Mr. Marcotte: Perhaps this shouldn't be in the form of a recommendation, but a report stating, "Headquarters, AFSC, has accepted the responsibility--

Comment: Somehow, through various reporting procedures, you should encourage people who write a contract to send you a copy, so that you don't always have to take the initiative and find them.

Mr. Marcotte: Can we ask the Services to put it in their newsletters that Headquarters, AFSC will keep a master file of contracts and other documents related to contracts, with copies to be available, as needed, for any interested party.

Comment: I make a motion that SLA be approached on the subject of contract libraries with a view toward SLA's involvement in contracting.

Question: Are you referring only to military libraries or Federal libraries across-the-board?

Reply: Across-the-board.

Mr. Marcotte: Let's see if I have down what you said. I have, "SLA be approached on the subject of contract libraries with the idea that SLA become involved in contracting."

Comment: I'll be attending an SLA meeting the end of this month. If you want, I'll present this and see what reaction I get.

Comment: I can't envision SLA actually coming in and running a library. But, there's a lot they can do professionally -- by issuing guidelines, standards and so on, which are needed. Perhaps a sub-committee should be appointed to work this thing out so next year we won't have to start at Base 1. We will already have worked on it.

Comment: There is a division in SLA that could work on this--the Library Management Group.

Comment: I'm trying to draw a parallel in my mind with the American Medical Association, thinking that they will not endorse particular doctors but they will tell you, if you're new to an area, who the specialists are in your particular ailment. Perhaps SLA could do this type of thing by providing lists of prospective bidders, like a clearinghouse.

Mr. Marcotte: Then the basic recommendation is simply that SLA should be approached on the subject. Is that correct?

Comment: Well, I would like to say that before SLA is formally approached, we ought to get a more coherent idea about this, rather than just drop the whole concept in their arms and see where they go with it.



Mr. Marcotte: Any further discussion?

Comment: If you'll put in the contract that the contractor has to have certain credentials, then you will know that that contractor can perform that project.

Mr. Marcotte: Well, I have it on the floor, even though we're not taking seconds, as part of our recommendation that SLA be approached on the subject of contract libraries, with the idea that SLA become involved in contracting. Is there any further discussion before I --

Comment: Didn't someone add another suggestion for the motion?

Comment: That SLA develop standards? I will consider anything you would like for me to do. I happen to be going to the Board meeting because I'm Chairman of the Nominating Committee, so whatever you want, I'll do it. Are we going to add "develop standards" before we vote?

Mr. Marcotte: We'll have to have an amendment.

Comment: I think that has real validity, because what you do through a professional organization has greater impact.

Comment: May I make a suggestion? It's going to seem awfully funny if, out of a clear blue sky tomorrow, we come out with a recommendation that SLA--why SLA?

Mr. Marcotte: Because a motion was made that way.

Comment: This group is a part of the Special Libraries Association.

Mr. Marcotte: What I have on the floor is "That SLA be approached on the subject of contract libraries with the idea that SLA become involved in contracting and also help in developing standards, as we amended it. Now, is there further discussion on this before I call the question?

Comment: If we talk about developing standards, are we talking about standards for contract specifications or for performance or --

Mr. Marcotte: I understand it's for operation of contract libraries. We seem to be getting bogged down here. Is there any further discussion?

Comment: Well, I share his feeling and I thought we could finally get down to what we're really trying to do here. It seems to me that to approach SLA with some general statement like, "We would like you to become involved in contracting" is a foolish thing to do. There's no meaning to it. I think we should ask for a set of standards for a contractor-operated library so that if we are faced with the situation, we can say, "Here are the standards. This contract must meet these standards."

Miss Driscoll: But don't you think we have this already from ALA? They have already published standards for libraries. Can't we simply

say the library should be run according to ALA Standards?

Comment: ALA has standards only for college and research libraries.

Miss Driscoll: And for medical libraries. If we are to operate by ALA standards, then that should be stated in the contracts. Are we going to have different standards because a contractor is running the library?

Comment: Won't there have to be some variations in those standards, though? We do things according to the mission of our installation or activity. These will vary.

Comment: I understand one thing a little differently when we were talking about standards. It wasn't about the actual running of the library, but of the contractor itself. I understood the standards related to the quality of the company bidding.

Mr. Marcotte: Standards for contractors?

Comment: Some kind of guidelines, or else you leave yourself open to all kinds of problems.

Mr. Marcotte: Procurement regulations are such that they say if you write your specifications properly, unqualified bidders will not get the bid.

Comment: But we're not writing the specifications.

Mr. Marcotte: You're writing a work statement. You write your specifications into your work statement. If that's adequate, then you will not get unqualified bidders.

Comment: I thought you said earlier that no matter how detailed that work statement can be, it may be cut down to a couple of sentences. Well, how are you going to put all that in two sentences?

Mr. Marcotte: That's the theory, not practice.

Comment: AF has a regulation. We don't have the same option. I want a specification where I can say, "This is the traditional standard. This contractor won't meet this traditional standard." whether he knows anything about it or not, he will have to hire people to meet that standard, and will bid according to that standard.

Comment: I have a suggestion. That is--to ask ALA and SLA to insist that if libraries are going to be contracted out, that they not be part of a total facilities contract.

Comment: I withdraw the motion because what I had in mind was that if a single organization were to get as many contracts as possible, this would content librarians, would provide the most potential that would insure professional reaction. I don't see this happening here.



Mr. Marcotte: Well, if the recommendation's been withdrawn, we don't have to vote on it. But if someone wants to pursue it on an individual basis, they can talk to Jims Murphy and see if she's willing to say anything to SLA for us. Right now we have two approved items for the report tomorrow. One, a recommendation that this program topic be continued next year, and two, that AFSC has offered and the group has accepted that offer, to be a clearinghouse, and that each Departmental Librarian will put something in the newsletter to the effect that AFSC will be a clearinghouse. Are there any other recommendations that should come out of this group after two days?

Comment: I recommend that requests for copies of contracts be cleared through departmental libraries.

Mr. Marcotte: That's fine. I assume each of you will want to maintain your own departmental file as well. Okay, we have two recommendations. Does anyone else feel strong enough about anything that the whole group should know about it?

Comment: I want to ask a question. Can we recommend that the group next year actually sit down and try to draft some definite guidelines?

Mr. Marcotte: I'm not too sure that would be feasible in five hours. I had an idea a moment ago when we were talking about the possibility of forming a recommendation from the group - that a committee be formed within the Military Librarians' Workshop, not just a panel next year, but a committee to work on a model statement of work and model checklist.

Comment: What I was thinking about would be more along the lines of some kind of manual prepared by each Service. For example, since our regulation is a very detailed one, we would do a manual, pamphlet or whatever, that would tie in with that regulation. Rather than try to do a tri-Service document, we could share ideas.

Mr. Marcotte: Couldn't we just recommend that each Service establish a committee and that the Chairpeople of these committees meet as a separate committee to coordinate between the three Services.

Comment: You'd have to do it that way.

Mr. Marcotte: How would you phrase that as a recommendation?

Comment: Recommend that each Service have a committee that would develop a model work statement and model checklist and that the chairpersons meet together before the next Military Librarians' Workshop to present these to the group.

Mr. Marcotte: Would these be official committees which would have to get approval all up and down the line?

Reply: Oh, no.

Miss Driscoll: The next hurdle will be getting the officials and the contracting procurement people to use what we would draw up.

Comment: Once we have something, we can go out and try to get endorsement.

Mr. Marcotte: Let's see if I have this straight. Recommend that each Service form a committee to develop a model statement of work and model task monitor checklist; further, that the chair of each Service committee coordinate with each other and meet as necessary; further, that these Chairpersons be part of the recommended task work group at the next Military Librarians' Workshop. Does that get you what you want?

Comment: Well, the other part of that recommendation was meeting early at the next Workshop.

Mr. Marcotte: I said meet as necessary, rather than at a specific time and place.

Comment: I think we should recommend in the record that the Committee should meet two days before the next Workshop begins. If they don't, there's going to be chaos.

Mr. Marcotte: Shall we put in "at least a pre-conference meeting" before the next Workshop? Are we ready for a vote on this particular recommendation then? All those in favor, signify by saying, "aye," opposed, "no." It's unanimous then.

Now for a summary of what we did. What did we do? In terms of what was learned here, our program theme was Libraries in the 1990's, and we really didn't discuss that very much because we got stuck in what's going on right now.

Miss Driscoll: I believe by the 1990's, most of our libraries will be contracted out. It may come very suddenly. We may not even have time to prepare a statement of work.

Comment: I don't want to raise this again as a recommendation, but here's where I think Gary has a real good point, because this is a case of public libraries dealing with Armed Forces libraries. I think it does seem like a place where ALA has a part to play.

Mr. Marcotte: In your bibliography that was handed out yesterday, there is an ERIC document that was put out by the Nebraska Commission on Libraries as a guide to public libraries in developing contracts for services.

Comment: I have this feeling that by 1990, we will be back in business. We will go down for contracting, and then we will come back.

Mr. Marcotte: What else did we do these last two days? Hopefully, we found out that there are already several pre-existing contracts floating around. The Air Force has more than others, but Army and



Navy are catching up rapidly due to A-76. We had a very good talk by Mr. Russell on the background of these things, and as far as executive levels are concerned, a library is a contractable entity. We went over the state-of-the-art report of who's doing what. We tried to make up a sample statement of work, but it was impossible for a group of twenty-five people to agree. Hopefully, the committee we recommended will be able to come up with something. We had the contractor point of view and a slight variance from Mr. Russell's statement that contractor personnel are paid less than Civil Service.

Did we accomplish anything else? We made people aware of what was going on. I think we opened some eyes in here in terms of how much has been going on.

Comment: And behind the scenes, we've got to be sure that the three people assigned by the different Services to a task group are in fact invited next year by virtue of the task group, because this is going to take time.

## Task Group 1

### Session 3

We'd like to give equal time to the Army and Air Force this morning, so, Nell, would you like to tell us where the Army is, what is going on - and what might be in the planning stages.

Strickland: The Army started out, by letting the office that has responsibility for setting up the contract, go out and request a schedule of activities for review. The schedule ran through 1984. What I have been able to get so far are only extracts where specific libraries have been identified. This was given to me only for the libraries that the Adjutant General had competency for. I did check with a couple of other locations to find out what was happening in their areas. The Army has one actual operation that already was mentioned before - small morale support library that is in the Sierra Depot area; another that is out on bid at the present time; and two we have official notification of one post and one technical library in FY 80. That is what was given to us as official. Actually, there are three posts and one technical that are going contract. The schedule that came in to us is incomplete, and I understand from Jim Byrne this morning that every one of his libraries is scheduled for review within the next three years. Is that right?

Jim Byrne: Not every one; twenty-one of them are scheduled.

Strickland: According to the official schedule, nothing is scheduled in FY 81. In FY 82, there are seven, and in FY 83, there are only two. Now, that is what has come in on the official schedule, but what is actually happening out in the field is something else again. They do not always talk to each other.

Driscoll: Do you mean they are not talking to MAJCOM librarians or they don't have a good handle on it?

Answer: In TRADOC, FORSCOM, there is communication. In DARCOM a letter has gone out to each of the DARCOM depots and the labs. The Command Librarian did not see the letter, but she will be brought into it when replies come in. There is at least coordination at this point. The point of contact I have at AG is the manpower representative - he sits on the committee and is the point of contact with the Army office that has overall responsibility. He feeds back to me anything he gets.

Driscoll: Do you prefer not to identify what's out for bid?

Strickland: The one that is out for bid is Selfridge in Michigan.

Driscoll: I think we have pretty well covered Air Force, however, we would like to get from Georgia Cavin a copy of what SAC missile station contracts say in their two lines - if you can get a copy of that contract. As Fred said yesterday, AF is not looking at libraries right now, but that doesn't mean that in the field we don't have



someone looking at them. We have two things we have to do today. One is to discuss the statement of work, which is so important for us to understand. Second, to bear in mind we must report tomorrow to the group on our activity and prepare recommendations for future workshops. So, think over what you want to tell the group - what we have been doing and what we think should be done. Should we recommend that this committee continue for another year? Should we recommend that we collect this type of information and have a central repository, so that all of us need not reinvent the wheel. Next item. We all have met Jessica Rich, both as a professional librarian and a military librarian. She is an employee of Federal Electric Company and runs the the WSMC Technical Library for AFSC. Federal Electric has a contract for what we call the housekeeping activities on our Western Test Range. We thought you would like to hear the other side of the coin - what it is to be a contract librarian for a military installation. I think she'll feel free to answer any questions. Jessica -

Jessica Rich: Just for the record, I'm operating as an individual, not as ITT Federal Electric. Yesterday, Eleanor said "the opposition" and there are times when I feel this way. Most of the time, I do not; I'm just another librarian with the same problems you people have and the same situations. There are things I have that probably are better than you have, but there are many things that are not equal to what you have. Many things I have no control over, but remember one thing about the contract libraries - each situation is unique. When I went to work for FEC, I was in the business world, so to speak, hired off the street. A neighbor said to me one day, "Do you want to go to work?" I asked why, and the neighbor answered, "Because we have a job for you." They handed me the key and I walked into the library. I had no training in company policy. I worked for the company for two years before I found out that I could only order, at most, \$250.00 at one time. Anything more than that had to go out on bid. I didn't know about Eleanor Driscoll. My predecessor, with whom I had only a short time, said, "You will be meeting somebody from AFSC." We all live in a world of initialisms and acronyms. (I wondered what is AFSC.) I had never had any association with the military before. I had worked either in a university or high school library and had no special library experience up to this point. I always tell people this -- there are two people in my library (I'll call it my library), and I call us the Indians. I have an immediate supervisor, he has one and then, there is a man who is head of the WSMC Division. According to the regulation I have a library officer, as has been mentioned before. He is a young person who is under "other duties as assigned," but knows nothing about a library. Then, we have what is called an ACO.

Driscoll: Is the library officer usually a young 2nd Lt?

Rich: Yes, although I've had a couple of Colonels who also knew nothing about libraries. There is also the contracting officer, and then the AFSC Director of Command Libraries. These are all the Chiefs, and there are many more Chiefs than Indians. I am responsible to all of these people. We aren't the Space and Missile Test Center anymore. On 1 October we changed names. It's WSMC's library; it is an Air Force library, but I am also a "company" librarian.



This is one of my biggest problems. I have an identity problem. I really do, and I'm still not sure, sometimes, for whom I'm working. I have to fill all these reports out for the Air Force; I have to satisfy WSMC, I have to make my disclaimer notice, and I have to keep the company happy. This is one of our biggest disadvantages; it really is an identity problem. When I go places, usually I go as a WSMC librarian because I run the WSMC library. When I represent the company, people will ask where is it and what do you do? I will say I run the Western Space and Missile Center Library. They respond, "Well, isn't that military?" It is!

Driscoll: When I go to visit, I have to touch base with all these people too - the Federal Electric supervisor, the library officer, and the Head of the section he might be assigned to; both Jessica and I really walk a very tight line. A lot depends, of course, on the contract librarian. We have had situations where this person has almost been afraid to answer my questions, because he fears he might say the wrong thing. So it's awfully important in the contract that we get into the SOW a requirement for a highly qualified professional librarian to run the operation - someone who is trained for service as Jessica is. I must say that some contractor personnel only work on demand. Contract librarians are in a very difficult position and as library supervisors or OPR's for contracts, we really need to know this.

Jessica Rich: I have never had any resentment from the military people I have run into. There have been some at meetings who have said, "Oh, we are going to have a contract librarian coming in." The first time it happened to me, I didn't say anything, and I'm not going to say anything now because it's your problem, not mine. I do a job-- the same job you do. I would like to think I do it well. There are lots of things I don't do well, but I think I run my library well. I have no control over the facilities. I did have 3300 square feet in the library; when I came back from SLA we were told we were losing half our space, and must be out by July 6th. It took us until the 10th, but we were out. The other side of the room is not occupied yet. It took five movers, two installers, the gal I work with and my supervisor one full month to move. I crawled on my hands and knees for days moving that library. We have no control of our operation. We are always hearing rumors and never know what's true. I can't walk into an office and say, "Is this true?" My situation, which contributes to my identity problem, is that I do not work in the building which the rest of my company occupies. I never have. I don't know anybody in the company -- I decided to join the bowling team so I could meet some of these people. This is true; I never see them. Some of them use the library, but most of our requests come in over the telephone or in writing.

Question: Who pays you?

Rich: ITT Federal Electric is paying my salary. They also pay for most of the books in the library.

Driscoll: This is interesting. I think we should clarify procurement procedures a little. The contractor is reimbursed. The books



all become Air Force property. The contractor purchases and is reimbursed by the Air Force. This touches on something said yesterday; Jessica, do you spend local WSMC money or only contractor funds when you buy?

Answer: I use all contract money, but WSMC contracts for some things such as Showcase, and the military specifications and standards.

Driscoll: We also allocate Air Force central funds to the library. As some of you know, there is in Air Force a commercial technical publications fund for which headquarters Air Force budgets each year. Each MAJCOM is allotted a certain percentage of what they have asked for, and we in turn allocate funds to our libraries. WSMC is an Air Force account-numbered library; therefore, we allocate money and Jessica buys through this central procurement system. She has more than one source of buying, however, which is very nice, because the contractor can buy much more easily than the Government. Jessica can establish charge accounts very easily; whereas, in DoD we really have to struggle to establish such agreements. Jessica can pick up the phone and order things, so it's far cheaper to do this.

Question: The people that you serve - your users - are they both Federal and contractor employees or mainly contractor employees?

Rich: I serve the entire spectrum of WSMC - military, civil service and WSMC contractors. I buy only for WSMC and arrange technical services for contractors. Anyone employed on Vandenberg can walk in and use any of the technical information in the library as long as it's on the open shelves. I cannot, however, buy specific items for anyone but WSMC personnel.

Question: Does this in part hamper you, also, the fact that you have different interactions, different protocol and different users?

Answer: I don't see any difference. I don't treat them differently -- other than as I say, if we don't have a book in the library, then I can't go out and buy it. If WSMC tells me to, it's a different story.

Question: Who is accountable for your library?

Rich: The library officer.

Question: Is he military?

Rich: Yes. We would like to make the ACO, the Contracting Officer, the library officer. He has to monitor what I do anyway, and he also sits in on the audits. We would like to get away from the library officer who is the nice young 2nd Lieutenant who comes in under "other duties as assigned."

Cavin: Are the commercial technical funds for her library deducted from the contract or do you charge the contract or is that just not spoken of?

Driscoll: We do not charge it; we support that library just as we support all of our other AFSC libraries. You will notice in the new Air Force Library Regulation (AFR 215-15) that Air Force identifies contract libraries for the first time. HQ AF has encouraged us to support these libraries. It's to our benefit to put funds there so that the librarian can build the collection. This reminds me that there is a requirement we need to get into SOW's "collection development." Contract libraries will never be more than adequate if we just say "acquire books as needed;" you must give that librarian responsibility for "collection development," especially in the technical libraries. If you are in the nuclear weapons libraries, for example, you should require maintenance and development of an up-to-date, comprehensive collection or similar words; never write "acquire books for the library" because that's exactly what they will do. I have had this situation arise. It's our responsibility to see that the people we serve get the best rounded library service.

Rich: If I order something that the contractor wants to use in an office, I do not use central funds. I use contract funds. I keep lots of little account books. I can literally account for every cent of contractor and central funds I use. I have to record the use of contractor funds as well. I keep account books, and the Accounting Department keeps account books. If the contracting officer walks in and says, "I want to see what you have been buying lately that isn't on your list," I can show him. He could say, "What are you buying with Air Force money?" and I could show him.

Driscoll: Whatever she buys with Air Force money is also approved by my office.

Cavin: Does all the material become Air Force property?

Driscoll: Yes, except for what she buys for her contractor with contractor funds.

Cavin: That does not become Air Force property, then?

Driscoll: Not unless the Air Force reimburses them. There are library materials the contractor will require that the Air Force does not need for the mission. The contractor is not reimbursed for these.

Rich: If a book is put into the library's collection, it becomes property of the Air Force. If it goes to one of the offices, it is considered expendable. There are of course items you must have to run a business. It is easier to have a librarian order these with discounts. Otherwise, all the offices within the company would be ordering and no one could ever keep track of funds.

Driscoll: Are there any other questions?

Question: Besides the comparison, the identify problem and confusion of whom you actually work for and the people you work for not knowing much about libraries, and not being able to plan because you have to deal with a lot of hearsay (that's not to say it couldn't happen in government), what is the advantage to the government - if every year



or couple of years, a new person is put in with a new identity problem and new confusion?

Driscoll: Well, the company doesn't usually do this. Jessica, how long have you been in this job?

Rich: Five and one-half years, and FEC has had the Range contract for twenty years.

Driscoll: Her predecessor was also on board for several years. Anyway, a new contractor normally tends to rehire the previous staff if possible. It's to his advantage not to bring someone in from the street when experienced personnel are available.

Rich: I believe the rehire figure is about 80%. If FEC lost the contract and a new one came in, he would probably pick up about 80%.

Question: What is the mechanism that is set up to make certain that you, at all times, are more efficient and effective than other companies and federal employees?

Driscoll: This is accomplished through the cost analysis done before the decision is made to contract. When the contractor bids, he specifies how much it will cost him to run the library.

Comment: But in this case that was 5½ years ago.

Driscoll: Remember, we are talking about one part of a total facilities contract; this is not just a library contract - the SOW occupies only one-fourth of a page in the overall contract.

Question: How often do they compare the operation with what other contractors and federal employees do?

Driscoll: My office reviews it twice a year through required library reports.

Question: How big is your staff, and how many people do you serve?

Rich: The staff varies from two or three, and as I just said, I serve the whole activity. Basically, it's WSMC personnel and its contractors.

Driscoll: Remember, this is a Range operation. These people don't require the same depth of services that R&D personnel do. They are mainly concerned with getting missiles off the ground; they do not perform basic research - that's already been done. They primarily test and evaluate performance.

Rich: We have now about one thousand registered borrowers. I also serve personnel stationed thousands of miles from California. I never meet some of the people who use our library service.

Question: What literature searching systems do you use - automated or manual?

Rich: We use manual.

Question: No access to on-line searching?

Rich: I have a contract for this. I'm not yet directly on-line.

Question: I'm curious about the personnel end of contracting. Who hired you? I know you work for FEC, but who interviewed you? Was it entirely FEC's decision; did the Air Force get into the decision?

Rich: Federal Electric hired me. The FEC supervisor and my predecessor interviewed me.

Question: If the Air Force decided they didn't like you - then, tough?

Rich: That's right.

Driscoll: If she were incompetent, we might be able to do something about it. Let's turn to your folders for a minute - Handout 14. Now, these are the guidelines for the operation of that library. Note the requirement for "qualified professional persons." I have not been able to get "professional librarians" into any contract yet. Neither can I get a requirement for a degree in library science with a contract because Civil Services does not have this requirement either.

Question: How much responsibility does she have to fight for more people or to defend the subcontract? Is all this part of your job, too?

Driscoll: Jessica runs the library and makes recommendations. That's her job. This brings up an interesting point. I was recently at WSMC on a staff visit and recommended in my trip report that the staff be increased. I recommended this to the WSMC Commander because I can't tell the contractor to do anything. If he is doing a good job, it doesn't matter if it takes one person or ten.

Question: If Jessica felt she didn't have adequate support, and she didn't like it, she leaves - right?

Driscoll: That's right. Just as we could resign in the same situation. Remember DoD is trying to get something done as cheaply as possible. The contractor is trying to do it as cheaply as possible; he is interested in making money. Libraries, as Fred said yesterday, are not considered priority functions.

Question: I worked for the Tactical Air Command. Our AF contract office did not interview us, but he did have to approve our appointment.

Driscoll: Are you a contract librarian?

Response: I was for a year.

Question: What is the Air Force's provision for continuity of library service if the contract is either restructured or under bid?



Driscoll: The library will continue. It is an Air Force library; the next contractor will run it and he will, probably, rehire the current staff as his employees.

Comment: That's not always the way it works out.

Question: Has there been an attempt to put in your contract structure a contracting officer specifically for libraries? I mean, has this come up?

Driscoll: No. I was down at Cape Kennedy a few years ago to see a NASA library which is contracted out. It's an excellent activity. As Fred mentioned, their SOW is about 250 pages long. At the time, the library was just contracted out, the incumbent NASA librarian was appointed the contract monitor. When she retired, a non-librarian was appointed. Why should we pay somebody \$30,000 or \$35,000 to babysit a task when you have required the contractor, I hope, to hire a professional staff. It shouldn't be necessary. I think there should be some higher headquarters supervision to do this, but I don't see the need at the local level. Incidentally, I'm sure you have all read that DoD is going to be contracting hospital services in a year or so. If hospitals can go contract with life and death involved, why not libraries?

Comment: It appears to me you need some assurance of quality control, because, your users don't really know what's available.

Marcotte: The only way you can insure quality control is through checklists and appointment of a contract monitor who is interested in doing a good job.

Driscoll: If there are no more questions, please turn to your handouts. You will find copies of most of the contracts we have gathered. There is very little available for the post or base people because there hasn't been a lot of that done yet. I feel this is where the big breakthrough is about to come; however, I wonder why some firm hasn't already entered the field. Remember the dependent school system? They used to be run by DoD but now they are run by local school systems under the purview of HEW.

You might want to take some time now to look at the handouts. Look first at AFSC Pamphlet 800-6, Statement of Work Preparation Guide. This is an Air Force Document. Become familiar with it and use it as a guide. In Paragraph 1-5 in AFSC 800-6, we read that not all parts of the pamphlet will be applicable. This is true of any situation. Go to Chapter 2, Step 4, where it talks about participating personnel. Try to get other people to help you. Don't try to do it alone, and conversely if there is a group forming to study contracting, try to get in it. Review the requirements, review the directives, your regulations and manuals - whatever applies to the library operation. With reference to format and composition, every statement of work that exceeds two pages should have a table of contents. That may or may not apply to you. Abbreviations may be found on page 2-3. If you want the contractor to use automated services, say so - make more than on interpretation virtually impossible. A



good statement of work states specifically what the contractor and the Government agree will be done. Use the active rather than the passive voice and spell out the obligations of the Government, such as provision of facilities, heat, light, air conditioning, work area, and that type of thing. Avoid loopholes; include procedures; do not over-specify (Mr. Russell covered this yesterday). Now, for Paragraph J. Does the SOW tell the contractor exactly what he is required to do? Exactly what do we want him to do? This is the key. Paragraph 26 states, "Is it (SOW) sufficiently specific to permit the writer and the contractor to make a list of manpower resources needed?" Does the contractor know what is required of him from the statement? These are guides for you. Capt. Marcotte will now get into the details of preparing a statement of work (SOW).

Marcotte: The only contract you are going to be able to cross-check as far as work statements and performance monitoring are concerned is Patrick's. Items 13 and 19 would correlate. We would like to have given you the checklist for Arnold, but it's a restricted document. It is one of the best ones I have seen in terms of contract monitoring checklists. An attempt is to measure quality of service. Next, for an hour or so, since this is a workshop and I'm not here to be the fountain of knowledge 100% of the time, we want some participation in terms of coming up with what this group feels should be the minimum in any statement of work and in terms of the type of information to be included. Take ten or fifteen minutes now to look over the handouts. By glancing through these work statements and thinking about ones you have done yourself, you can come up with some input. Also, think about what items we should come up with in terms of what you feel is important to include. I hope that all I have to be up here from now on is the recorder and moderator. We have many people in the audience who are willing to stick out their necks and say what should be in a work statement for a library contract.

You may want to specify some things that should be in a technical library contract only, and others that should be in general library contracts, because there is a difference in the way they operate. We want to hear especially from those people who have already done them. Mr. Byrne, you have been working on this, haven't you?

Byrne: Only from a local standpoint, but I'll be happy to make the first suggestion.

Marcotte: We have a volunteer.

Byrne: The qualification of personnel to operate a library must meet minimum standards of X-118 - the handbook for the 1410 series of Civil Service for libraries. Write that in specifically; personnel must meet same standards as Civil Service in employees to operate the library.

Marcotte: All right, in all cases, staff must meet the 1410 standards.

Byrne: A minimum would be for at least one person to meet the 1410 standards for libraries, or 1412 standards for Information Specialists.



Marcotte: In other words, prevent the contractor from substituting typists or technicians for professional librarians.

Question: Wouldn't that depend on the size of the library?

Marcotte: No, in the Air Force there are some really small installations, where manpower only requires the equivalent of an NCO.

Comment: I'm not saying that. With larger facilities, shouldn't we require more than one?

Response: Well, this is minimum; we are saying there is a minimum of one person.

Driscoll: Should we include a requirement for specific professional positions such as Chief and the Director of Reader Services?

Response: As a general statement, this would stand and the number might be geared (not the total number) depending on if, when you are writing a specific specification, you know in a small activity that a 1412 might be the thing. The mission of the particular activity will determine what you require.

Comment: The basic idea is that there will be a paragraph on personnel requirements.

Question: Is it necessary to specify exactly what you want?

Marcotte: If you don't specify what you want the bidder doesn't have to state what they agree to supply.

Cavin: When the contracts were written for SAC's Northern Tier bases, I inserted "a professional librarian" and in parentheses "Master's Degree from an accredited library school," and it flew. It was an effort. I specified the hours and the standard library procedures that would be followed. Then I talked to the man who writes the SOWs and explained to him that this was essential. I had a whole page, but I cut it down to four sentences of what I thought was most important. I felt that if we could get a professional librarian who knew standard library procedures, we would be way ahead of ourselves.

Driscoll: Can you send us a copy of that Georgia?

Cavin: I don't know who has it now. The whole idea was suddenly dropped and we didn't contract the bases.

Question: Who makes the decision on what goes into the work statement and the contract?

Marcotte: Supposedly, the functional officer will write up the work statement, but contract or procurement personnel are actually the ones who write the contracts. If they don't like what you propose in terms of tasks they don't feel are appropriate, they will come back and ask for a rewrite. You may have to fight your own contracting people to get what you want.

Question: From your own agency?

Marcotte: Yes, from your own agency or whoever is putting the contract out for bid. If the library SOW is part of a total facilities contract, you will be very limited on the amount of space they are going to let you use, so you will have to make decisions as to what we really want to put in there, in terms of criteria. You can get a good library operation with a one paragraph statement of work. You may get one and you may not.

Driscoll: There is something else you can do. I have the Air Force Library Service Regulations here. Notice in Item 13 there is a paragraph that says the contractor will comply with this regulation. This regulation describes in Table 3 the requirements for professional librarians - (1410) as administrators. We should try to get the same requirement into our contracts.

Marcotte: What we are trying to get at today is a list of what we feel are basic to any work statement; not necessarily how to phrase the requirement. We have several examples here. They are not always good, but they are not necessarily bad either. It's better than nothing to start from if somebody comes to you and says that they need in 48 hours a work statement to go in this contract that is going to go out for bid the next day. All we are trying to do today is to help you at least get your foot in the door, in terms of having some examples of how some other people have done it -- some actual contracts. Some procurement offices will let people have a pretty free hand and others are extremely tight.

Question: I have a question about the content of one paragraph on Handout 12. On the reference document, the last sentence says "The contractor is expected to be conversant with all pertinent documents in the files division. I was under the impression that the contractors didn't have to go by the Government ordering procedures, and it would not be to your advantage to want to do it?"

Rich: If I spend Air Force money, I have to follow their procedures.

Driscoll: I think they are referring not to the library procurement, but the procurement procedure of the contract.

Marcotte: I think this particular library has some input into ordering military technical orders which is rather strange. Normally, technical order libraries are completely separate activities.

Comment: There seems to be one advantage to contracting out; that is - that the ordering procedure seems to be a lot easier.

Marcotte: This particular contract - I don't know if the new one has it in there or not, but the old one had a statement in there that the contractor will order personal books for contractor employees and then be reimbursed by the employees, because it is in a remote location.



Driscoll: They were still doing this when I was there earlier this year. There is no way I can stop this.

Marcotte: It states in the contract that the librarian would order personal books for these people. Last time I was there I saw a very nice chain book store in the new mall. You can get some odd items in these contracts depending of course on who writes them.

Driscoll: In terms of personnel, the contract at Cape Kennedy is interesting. The number of man hours required to operate the library are spelled out. It doesn't say you will have a staff of 8, it says you will provide 320 man hours of service a week. This is a good point. I have been more careful in getting anything similar into our contracts. This means that in case of leave, contractor has to provide a body. If you don't specify man hours in the contract, the contractor doesn't have to replace personnel on leave.

Question: How about hours of operation?

Driscoll: That can be put in there - minimum number of hours.

Question: In other words, during the hours of operation, there will be qualified personnel on duty?

Marcotte: You would have to specify that. Otherwise, they might just provide a body.

Comment: My suggestion was the levels of staffing, and that's another way of saying the number of hours.

Marcotte: You mean service hours or hours open for service?

Response: No, that's different. You can be open for service with one or two people there, but that's different from specifying the number of man hours that will go into the operation of the facility. "Hours open" could mean you can have it open without staff. I'm talking about the total man hours to run that facility.

Marcotte: You might run into problems in some cases in that area, because it's almost specifying how many people. We have 2080 hours a year established for Civil Service employees' availability. If we require 4160 hours, we know this is basically two people for the military or for the civil servant. You then basically specify that the contractor will operate with two people, and some contract people may not let you get away with this. You may and you may not, I don't know. You can try. What's another item in terms of library operations that might be a minimum to try to put in a contract in some kind of wording?

Comment: Reporting requirements is another one. In some of these samples I don't see any indication that the contract requires anybody to report, not a contract monitor, not even a customer.

Marcotte: Well, in some cases, that may not apply to everything,

because there is a requirement in procurement documents that the regulation requirements be specified on a separate page. You can also include it by saying "Comply with Air Force Regulation 215-15." This requires a semi-annual library report. There is a separate set of attachments to an overall facilities contract that covers Reports Required. If it's listed there it won't be listed in the SOW.

Question: That's not part of the statement of work, is it?

Marcotte: It can be, but it normally is not. If it's a total facility contract, it will probably be in that separate attachment, but if it's simply a library contract, it may be inserted in the work statement because your work statement is somewhat longer. If it's a separate contract, you can be more verbose in terms of requirements. Well, wasn't the Sierra contract rewritten recently? The contract we have here is, I believe the latest version. I got two stories on that operation. When I called them in 1976, the person I talked to said they were having problems in terms of getting the services they bought. The office I talked to this summer said they were having no problems whatsoever!

Comment: I had not heard that they were having any problems with the contract and certainly not with the cost to the Army. They were getting a fantastic amount of service for that amount of money that the contractor charged the Army - something like \$16,000.

Comment: I don't believe it. They're in California, and if Proposition 13 didn't tax their services, they're not real.

Marcotte: Eleanor, what was the problem with the Holloman contract?

Driscoll: The original contract only required three bodies to run the 6585 Test Group library. A2 provided everything else. A2 procurement channels were used entirely, unlike Jessica's operation. So all the contractor did was provide the people. Holloman is not an A2FSC base; we were a tenant on a TAC base. When the TAC IG came in to inspect the contracts and he determined that this contract was for "personal service" only if we reverted to an AF operation.

Comment: I mean specify in your contract the types of services - whether you are going to do searches and identify subject matter, rather than just store the indexes for them to use.

Driscoll: Look at Handout 13. Here the contractor was told they would select and acquire materials, and a little bit about how to do it. They were then to prepare materials for storage and circulation, and to provide reader services. This was done before we really got into automated services. I think we are going to have to include a requirement for modern progressive and automated information retrieval services in future contracts.

Marcotte: This is actually the bulk or the meat of your contract - what they are going to be doing.

Driscoll: You will notice under cataloging, the contractor is required to subscribe to the AF "CENCARD" program or the Library



of Congress Card Division system. We gave them a choice. We hope to tell them to subscribe to OCLC next time, as do the rest of our technical libraries.

Marcotte: OCLC - I have a comment on that. Jessica's not in it right now and her cost analysis says that it is not cost-effective for a small library like hers to operate under OCLC. But if there is a Command decision at Air Force Systems Command level that says we want a network and we want the holdings of all Air Force Systems Command Technical Libraries available on-line in OCLC, and we want them to participate in the inter-library loan portion of OCLC even though it's going to cost that contractor more money to operate that contract, the library will have to do it. The contractor will simply build it into their cost.

Question: My question is when the contract comes up for renegotiation, are you against submitting an Air Force bid against this?

Marcotte: You are talking about A76 cost comparison studies.

Response: Yes

Marcotte: To the best that I know of, none of these have ever had that done. There has been no Air Force bid. They went competitive with the Arnold contract for the first time in twenty years two years ago, but the Air Force did not do a cost study at that time.

Question: I want to know if there is any way to write in user-responsiveness; in other words, give a turnaround time?

Marcotte: Part of that you can pick up in the checklist of contract monitoring. It is extremely difficult to put qualitative measures in a contract. You can do it - yes - you can say 80% of all the inter-library loan requests should be done within five days or something like that. The contractor will price out how much it's going to cost you to get that stuff within five days, because it would mean phone calls and express delivery or something like that.

Question: Is that characteristic? You say it's difficult to put this in a library contract, because it's not difficult to put in other types.

Marquette: Qualitative or quantitative?

Response: Qualitative, because turnaround time is qualitative. I have contracted out for distribution services for several years, and we spell that out in great detail. It's very specific and the contractor follows it very specifically. It has a tendency to lock you in, somewhat, but it can be done.

Marcotte: It can be done. Where the problem comes in is when procurement tells you to condense three pages into five sentence, because your qualitative definitions are somewhat longer than just saying they will provide service - right?

Response: Well, yes, I could see that, but you do have the option.

Marcotte: You have the option of trying to put qualitative standards in there. What you have to be careful of is to define them, so that they are not impossible to meet.

Response: They can be rigid.

Marcotte: Yes, they can be rigid - they say 80%.

Rich: If you make it so general, when a decision has to be made on what you are going to deliver, how do you make it? Someone walks in one morning and says "I want on-line services" and you look at him and say "Okay, but what do I drop - do I quit buying the things you told me yesterday the Air Force needs, or do I quit cataloging?" You have to build in some kind of standards because for library services there are basic things that we offer whether we are using your money or the company's money.

Marcotte: That's what makes the library contract so difficult to write - to get quality service without depending on a quality contractor, who has some sense of delivering quality service.

Question: I would like to ask a question about the purpose of the group. Are we going to make some specific recommendations that might be used for the resolutions that someone could do something about?

Driscoll: That's what we stated at the beginning of the meeting; we want the group to tell us by the end of the day whether we will just report what we did, in the session or whether we will make some recommendations for future study.

Response: I think we should make some recommendations now.

Driscoll: Why don't we wait till this afternoon, when everybody has had time to think about it?

Marcotte: We have one more session to go.

Comment: Let me go ahead and throw this out, and I'll make a formal recommendation this afternoon. I think we should come out very strongly on this business of having a librarian somewhere in the command chain, officially designated as a contracting monitor. If it's not at the installation level, I think it should be on a large installation rather than in a major command.

Driscoll: Good, get it in your regulation 700.

Marcotte: Of course, the recommendations we make just to to the Workshop as a whole.

Comment: No, they send them on. I've been in Workshops where they are sent on to DoD.



Marcotte: This is my first Workshop; I didn't know that.

Question: What are the true objectives of the statement of work? Are we trying to make it easier to contract out?

Response: I think it's a two-way street that we can work. I like the idea that it has to be run by professional librarians. It gives me tools. If I cannot get enough staff - money - all kinds of restrictions we have to deal with, I can go to contracting out. If the contractor is not working very well, I can go back to library operation and hire new staff, and better trained staff, because in some libraries, they have the same staff 14-15 years, 20-25 years, and believe it or not, it's very difficult to operate. I feel contracting out gives me the opportunity to run the library better.

Marcotte: I don't have any simple answer.

Comment: I don't perceive contracting as giving us any better than what we've got, but I don't see it any worse. If you try to hold the same level of personnel, collection development, and services, and if you require these in the contract, we're then going to get about the same thing that we have now.

Marcotte: The official policy is probably to continue at least with the level of service you already have. Unofficially, I would hope all the librarians would fight to improve the services to a level of service they feel would be better.

Comment: Air Force libraries have directives and regulations that spell out the standards they must follow.

Marcotte: Right - and the contractor has to look up those regulations and figure out how much it's going to cost him to meet those standards.

Comment: But the Air Force's 215-15 tells exactly how a library will be run and covers standards. If they would just go by that, you would come out pretty well.

Driscoll: Let me warn you of one thing - you'll have a hard time finding out when a contract comes up for renewal or renegotiation. You really have to stay on top of this business all the time.

Marcotte: So the whole question we started out on is how to identify the services wanted or needed in a contract. It's a subjective approach by the individual people who write work statements as to what is absolutely necessary to be included. You may simply require that the regs be followed as a minimum. You may state that the library has to provide OCLC, Lockheed, BRS, or SDC, services. If it's a medical library, that they must use MEDLINE. You may require that readers' service be provided. Some people will say that you have to use a specific circulation system. You may require that they circulate materials, but you don't require that they have to circulate materials, but you don't require that they have to circulate everything.

What other things might we specify as services that you don't necessarily have to? Does anybody have any suggestions besides selection and acquisition of materials? Reader services. What is reader services, really? This is library jargon. Or reference services? It may be reference service to say, "There's the book on the shelf." There's a difference in the level of service expected in a technical library than in a post or base library, and in an academic library. In an academic situation library work is supposed to be a learning experience. The librarian is there to teach them how to use material, but not to actually find the information for them. In a technical library, normally you rush around and actually get that piece of physical information. You don't just store indexes and abstracts; you actually provide information. There are no 1-2-3-4 standards. It's a matter of subjective judgments. Let's go back. What else can we include in terms of what services a contractor should supply, at a minimum? Anyone else have any suggestions?

Comment: Would the contractor be required to use his own money for materials or would he use Government money: Is this understood or do you have to spell it out?

Marcotte: You have to spell it out.

Comment: In our contract, we had to use all Government money and procurement channels.

Marcotte: That would have to be specified in the contract as to who provides money for what. Do all the Services in post, base, ship libraries provide book kits of one type or another? Do these go to contract libraries? In the Army contract out at Sierra, do you provide the money for the purchase of materials?

Comment: This contract doesn't say so, but the last one I saw said the Army would supply either \$16,000 or \$18,000 for materials and in addition to that would send the kits. The money went to the contractor and then the contractor was responsible for purchasing the items. In addition, the contractor would provide other materials out of their money that would go into the library's permanent collection.

Question: Is there a regulation governing expenses?

Marcotte: I think there are some standard disclaimers in this type of thing; GFE versus CFE (government furnished equipment versus contractor furnished equipment). That's normally specified in contracts.

Comment: I think contracts should say libraries should be run according to the Library Guide to Services. Then we would know the librarian or whoever has to write those guides has the guide to go by.

Marcotte: Well, if you look at the NASA contracts - I have a couple here 200 pages long. That's what they do. NASA specifies in their library contracts exactly how they want their libraries run. You have two problems, really. If you have an existing library where the



contractor's going to take over an existing facility with books, materials, everything else, you'd write your statement a little bit differently, because you have some assumptions that can be made - that that library is going to be continued and that that contractor is going to operate it in substantially the form that it exists there. If you're starting a new library, who knows what you're going to get? There you'd probably have to have more specificity in terms of procedures, whether you'd want Dewey Decimal System used or LC, or Ranganathan's Colon Classification, or whatever. But in an existing library that already uses Dewey or LC, you probably wouldn't have to specify it in your work statement; it would be an assumption, a given. Now, if your contractor comes in there and says, "I hate that system; I'm going to change it," and they can do it within the cost of that contract, and it doesn't say in the contract which way they have to do it, then they can change it. It all depends on how strongly you feel about the way a library ought to be operated. But some of the comments I've been hearing, in terms of regs, etc., I think the people who are responsible for these ought to be thinking about the future in terms of the contractors. If it says you operate in accordance with these directives, think about what you might have to put in there for the contractors to do, so you could just say, "Follow the procedures x" in a contract. We've got directives from all three. Is that something we should do? What do you think of that?

Comment: I think it would be a marvelous idea to get it in, but there is no way in the world I could get it in my current regulation.

Comment: We just published ours and it took us four years to do it.

Comment: I'd hesitate to say we could get it done.

Marcotte: It's something that should be taken under consideration.

Comment: It's interesting, though, that Air Force actually has a different viewpoint on contracting out than I've been hearing here this last day and a half.

Driscoll: Natalie, why don't you take a few minutes and tell us where AF stands.

McMahon: I've talked with Tony (Dakan) about the session and asked him to go to the manpower people and ask again how they feel about it. He just called me back and said manpower didn't feel we would do much of it in Air Force. McClellan is a good example. I told you all yesterday that just recently they were considering contracting out all MWR activities at McClellan. The plans people at AFLC Headquarters initiated a feasibility study for this purpose. It fell on its face. It's not going to happen. So it's a strange thing to sit here and listen to all these people say it's something we might as well go ahead and get ready for because it's going to take place. Then I call Air Force, and they don't think so.

Marcotte: Well, they've got three years.

Marcotte: The official theme of this conference is Libraries in the 1990s. I'm not saying tomorrow these regs should be rewritten, but only if, and when it does come up, bear in mind that contractors who aren't too familiar with the whole military procedures may have to follow these regs.

Comment: The comment that I'd like to make in regard to this - it may not be something that will come up tomorrow, but we're essentially interested in providing good or better library services, and in context of the whole, this should raise in our consciousness some of the things that are necessary to provide it, whether or not it is contractor-operated or whether we will continue to provide the service, and I think as such, it's very relevant.

Comment: We don't have regulations like Army and Air Force. We are now in process of rewriting 1½ pages of regulations for our library at Fort Meade with no intention of contracting anything out. I would say I consider it's my job to find ways of not contracting out. We're not talking about individual services. In my own library, we have two contract librarians. I was surprised about compressing the contract, because we have 1½ pages about re-cataloging rare books; but I don't believe contractors will provide as good service as the library is providing right now.

Marcotte: That was the topic we said we weren't going to talk about.

Comment: In a facility contract, you have a very small SOW, but in a library contract, you can make it as large as you want.

Marcotte: The thing is, when they contract for base or post libraries, it's going to be part of a facilities contract, and you're going to have to limit yourself to one or two pages. The technical library may be slightly different. You may have a chance to do a tech library contract by itself, but I agree that work statements should be as complete as possible. The Walla Walla District contract for retrospective cataloging was fifteen pages. You have a chance to say more about these minor contracts than you might have to say about the entire library operation. How do you phrase these things? That's what we need to come up with eventually; not today, that's for sure. But some group needs to come up with what should be put in a statement of work for a library operation. Can we come up with some models that are better than the ones we handed out today? A lot of these tend to be put together without much advance notice.

Question: Can you put in something about how to keep a contractor from coming in and disposing of your rare books?

Marcotte: If you have a special collection or rare books, it should be put in the contract that the contractor will have to maintain this, as part of collection development.

Driscoll: We have something on disposition of materials in Handout 13, which is the Patrick contract. We put that in and we refer to



the applicable paragraph in the Air Force reg. Now, if they're following that paragraph, the materials are going to be reported to my office before they're disposed of, so I'm going to catch up with it. State at least that obsolete or excess materials will be disposed of in a certain way. Of course, there are people who might unknowingly call rare books obsolete, and you have the same problem with government employees.

Question: What about internal operating procedures?

Marcotte: Contractors are supposed to develop their own internal operating procedures. NASA, in their Goddard contract, included their User's Manual as part of the contract. If you can talk them into it, you can make a 250-page contract out of it.

Driscoll: Do you plan to do that with Navy, Jerry? You have an excellent Navy manual for library operation.

Coble: The library will operate according to the manual.

Driscoll: Do you plan to include this in your work statement?

Coble: Contractor-operated libraries would have to follow the same procedures.

Marcotte: It seems to be the consensus that we should try to put as much detail in a work statement as we possibly can with qualitative standards, what services should be offered, and how the library should be operated. In the real world, however, you may not be able to get this in. But try to get as much in the work statement as you can. If you have to write a manual from scratch just to include it in the contract, it's not going to be too good a manual. Most of these manuals are years in the making, aren't they?

Comment: Well, yes, they are. I think that most of the libraries that will be contracted out will be two and three-man operations, and you'll be stuck with a paragraph or two in a facilities contract.

Comment: I'd like to ask a question of someone who knows more about this than I do. Say, in my case, the county library takes over my base library and operates it. That's a county-wide system. Will they then be free to circulate Government books county-wide?

Marcotte: You have to write into the contract that if they're buying books with military money, those are Government property and I think you need a waiver to lend government property to civilians. Nell, do you know how that Sierra Army Depot works in this regard?

Comment: Yes, that's one of the reasons why this contract is so advantageous to the Army. The local county system runs it and county people are allowed to use the library, and county money goes into the purchase of certain books that go in there. They do have to maintain a separate accountability for the Army materials, but Army materials in that library are available to all the people on the base, as well

as to all the county people in the surrounding area.

Marcotte: There are no restrictions on circulation of Government-owned books?

Comment: No.

Comment: The advantage then would be that the county system's resources would become available.

Marcotte: They usually are, anyway.

Driscoll: We have this going on in Kern County, CA right now at Edwards Air Force Base. The community college, which teaches on-base, wants to allow people taking the courses who are not military-connected (our AF reg states only military-connected people can borrow material), to have access to our collection because it's closer than their community college library, which is ninety miles away. We're discussing this with the Edwards AFB Commander now. He wants to do it. He's given us a year to examine the situation, but the pressure is on us. I think it's going to have to be done.

Marcotte: Our time is about up. It seems the only conclusion we can come to today is that we can't come to any conclusions. There's no one single answer. I think we've had some good response from the audience in terms of some of the problems you're going to have, but we're not going to come up with any great panacea in this particular group today.



MILITARY LIBRARIANS WORKSHOP, 3 - 5 OCT 1979 CONTRACTING

HANDOUTS, PACKAGE, PART I - GENERAL INFORMATION

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3. Gotley, Bob, "Industry, Unions Battling over Contracting Out." Army. 29 (July 1979) 30-33.
4. Naval General Library Services, CNET Support. "Contracting Out of Library Operations." Letters by Gerald M. Coble, 19 Oct 1978.
5. Denham, Mary Anne Hodel, "Using Contracting to Achieve Library Goals," 18 Jan 1979.
6. McCann, Anne and Jonathan G. Burgess, "Procurement of Literature Searching Services." Online 3 (Jan 1979) 36-48.
7. Selected Bibliography on Contracting.

MILITARY LIBRARIANS WORKSHOP, 3-5 OCT 1979 CONTRACTING  
HANDOUTS, PACKAGE 2

PART II - Guides to Preparation of Statements of Work and  
Contract Monitoring Checklists

8. Air Force Logistics Management Center, Directorate of Contracting. "Service Contracts: How to Write and Administer Them." (OMB Circular A-76 and Cost Handbook Workshop, no date 1979.)

9. Air Force Systems Command. "Statement of Work Preparation Guide," AFSC Pamphlet 800-6, 18 Aug 1972, Changes 1-3 only.

PART III, Samples of Statements of Work and Library Service  
Contracts

10. Army. Sierra Army Depot, Calif. Statement of Work for base library operation. Base support contract, 1979.

11. Army. Walla Walla, Wash., Dist. Corps of Engineers. Contract for original cataloging for Walla Walla district library, 1974.

12. Air Force. Arnold Air Force Station, Tenn. Statement of Work for the Technical Library as part of The Facilities Contract, 1977.

13. Air Force. Patrick Air Force Base, Fla., Air Force Systems Command. Statement of Work for the Technical Library from The Facilities Contract, 1977. (For checklist see item 19)

14. Air Force. Edwards Air Force Base, Calif., Air Force Systems Command. Statement of Work for the Technical Library, 1971.

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17. Environmental Protection Agency (EPA). Washington, D.C. Procurement request for partial services. "Mission Oriented Contract for Library and Literature Related Services.", 1978.

PART IV - Contract Monitoring Checklists

18. Air Force. Vance Air Force Base, Okla., Air Training Command. "TRCO Contract Surveillance Checklist, MWR Division," 1978. (For the Library portion of support facilities contract. See also Item 12.)

19. Air Force. Patrick AFB, Fla. Air Force Systems Command. "Technical library checklist," undated. (For the library portion of the facilities contract. See also item 13.)



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## TASK GROUP 2

### CLOSING THE CARD CATALOG in the 1990's

Discussion Leaders: Christine Eynon, AF Flight Dynamics Lab,  
Wright-Patterson AFB, Ohio and Pat McConnel,  
Naval Research Lab, Washington, D.C.

The pros and cons of a manual catalog versus on-line information retrieval will be discussed by persons who have made the change or are studying the possibility. One commercial firm will discuss and demonstrate the alternatives.

\* \* \* \* \*

### Wednesday, 3 October

#### 1050-1100 - Session 1

\* Organization of program and goals of task group - Christine Eynon

#### 1100-1200

Computer cost model for alternatives to closing the card catalog -  
Dr. Robert Wiederkehr, King Research Corp.

#### 1330-1400 - Session 2

Management overview - Patricia Berger, National Bureau of Standards

#### 1400-1430

Data Conversion - Ruth Mullane, Army Library

#### 1430-1500

Department of Energy's System - Ruth Perks, DOE Library

### Thursday, 4 October

#### 0930-1000 - Session 3

Book and COM catalogs - Elwynda Chapman, National Oceanic and Atmospheric  
Administration

#### 1000-1030

Costs - Peter Lucuk, AFWAL Library, Wright-Patterson AFB

#### 1030-1130

\* On-line management - Joyce Davis, Cincinnati Electronics Corp.

#### 1330-1400 - Session 4

\* Reports catalog - Martha Adamson, Air Force Weapons Laboratory

#### 1400-1500

OCLC - Thomas Harnish, OCLC, Inc.

### Friday, 5 October

#### 0950-1200 - General Session

Task Group summary - Patrick McConnel, NRL

\*Paper not available at time of publication.





Dr. Carl Hammer and Task Group Leader Patrick McConnell



Dr. Robert R. V. Wiederkehr  
King Research, Inc., Rockville, Maryland

LIBRARY CATALOG COST MODEL PROJECT

BY

ROBERT R. V. WIEDERKEHR

OF

KING RESEARCH, INC.  
ROCKVILLE, MD. 20852



KEY DATES OF LIBRARY CATALOG COST MODEL PROJECT

APRIL 3	KING RESEARCH SIGNS CONTRACT WITH ARL
JUNE 4, 5	FIRST WORKSHOP: PRELIMINARY VERSION OF THE MODEL
JULY 5	INPUT FORMS, GUIDANCE SENT TO LIBRARIES
SEPT. 5	LAST INPUT FORM RECEIVED
SEPT. 10, 11	SECOND WORKSHOP: DISCUSS COMPUTER RESULTS
OCTOBER	DRAFT OF FINAL REPORT:
	<u>ALTERNATIVES FOR FUTURE LIBRARY CATALOGS: A COST MODEL</u>

## BASIC ALTERNATIVES

### UNIFIED CATALOG

#### FORM OF UNIFIED FILE

- |    |         |
|----|---------|
| 1. | CARD    |
| 2. | COM     |
| 3. | ON-LINE |

### SPLIT CATALOG

#### A. SINGLE FORM OF OLD FILE, SINGLE FORM OF NEW FILE.

	<u>FORM OF OLD FILE</u>	<u>FORM OF NEW FILE</u>
4.	CARD	CARD
5.	CARD	COM
6.	CARD	ON-LINE
7.	COM OR MICROFORM	CARD
8.	COM OR MICROFORM	COM
9.	COM OR MICROFORM	ON-LINE

#### B. SINGLE FORM OF OLD FILE, TWO FORMS OF NEW FILE.

	<u>FORM OF OLD FILE</u>	<u>FORMS OF NEW FILE</u>	
		<u>MAIN</u>	<u>BACKUP</u>
10.	CARD	COM	CARD
11.	CARD	ON-LINE	CARD
12.	CARD	ON-LINE	COM



## MODEL INPUTS

LIBRARY NAME

RUN IDENTIFICATION NUMBER

ALTERNATIVE NUMBER

### PARAMETERS DESCRIBING:

- GROWTH OF TITLES AND HEADINGS
- CATALOGING AND EDITING COSTS
- ADDITIONAL AACR-2 COSTS
- CARD CATALOG COSTS
- RETROSPECTIVE CONVERSION COSTS
- COM CATALOG COSTS
- ON-LINE CATALOG COSTS
- TRAINING, ORIENTATION COSTS
- COST OF CATALOG USAGE BY NON-CATALOGING STAFF
- MISCELLANEOUS COSTS

**Robert R. V. Wiederkehr, Ph.D.**  
*Senior Vice President*

6000 Executive Boulevard  
Rockville, Maryland 20852

LIBRARY CATALOG COST MODEL

LIB - TYPICAL ARL LIBRARY  
RID - 001M OLD CARD, NEW COM  
DOS - SEPT. 10, '79  
ALT - 5, SPLIT CARD/COM

	FISCAL YEAR			
	1981	1982	1983	1984
1985				

NUMBER OF TITLES  
TOTAL IN LIBRARY  
OLD FILE  
NEW FILE: MR

NUMBER OF HEADINGS TOTAL IN LIBRARY	NUMBER OF CONFLICTS TREATED	% IN CONFLICT
1	1	100
2	1	50
3	1	33
4	1	25
5	1	20
6	1	16
7	1	14
8	1	12
9	1	11
10	1	10
11	1	9
12	1	8
13	1	7
14	1	7
15	1	6
16	1	6
17	1	5
18	1	5
19	1	5
20	1	5
21	1	4
22	1	4
23	1	4
24	1	4
25	1	4
26	1	3
27	1	3
28	1	3
29	1	3
30	1	3
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94	1	3
95	1	3
96	1	3
97	1	3
98	1	3
99	1	3
100	1	3

828000	856000	884000	912000	940000
830000	811000	809000	807000	805000
813000	265000	305000	345000	385000
225000				
662705	684427	706210	728049	749936
1307	2338	2193	2061	1842
125	118	112	106	100

COSTS (IN DOLLARS) WITH INFLATION RATE = 0%	FISCAL YEAR
100	1960
100	1961
100	1962
100	1963
100	1964
100	1965
100	1966
100	1967
100	1968
100	1969
100	1970
100	1971
100	1972
100	1973
100	1974
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100	2088
100	2089
100	2090
100	2091
100	2092
100	2093
100	2094
100	2095
100	2096
100	2097
100	2098
100	2099
100	2100

COSTS (IN DOLLARS) WITH INFLATION RATE =	FISCAL YEAR		TOTAL	PRESENT VALUE
	1982	1984		
1981				

CATALOGING, EDITING  
INITIAL CATALOGING  
AUTHORITY CONTROL  
EDITING  
OLD NEW: MR

ADDITIONAL AACR-2 COSTS  
RESOLVING CONFLICTS  
CHANGING HEADINGS  
PROVIDING LINKAGES

CATALOGING, EDITING	510000	510000	510000	510000	2550000	1933298
INITIAL CATALOGING	16280	16840	17400	17960	87000	55554
AUTHORITY CONTROL						
EDITING	16205	16240	16200	16160	80925	61369
OLD	844	3675	4275	4875	19144	13743
NEW: MR						
SUBTOTAL	543329	546755	547875	548995	2737069	2073864
ADDITIONAL AACR-2 COSTS						
RESOLVING CONFLICTS	3268	5844	5482	5153	24602	18450
CHANGING HEADINGS	50978	91163	85512	80394	383789	287869
PROVIDING LINKAGES	0	0	0	0	0	0
SUBTOTAL	54246	97007	90994	85547	408391	306319

(Continued)



CARD CATALOG									
STORAGE: OLD	15682	15716	15677	15639	15600	78314	59389		
MAINTENANCE: OLD	18960	19001	18954	18907	18860	94682	71802		
SUBTOTAL	34642	34717	34631	34546	34460	172996	131191		
RETROSPECTIVE CONVERSION									
	23500	13500	13500	13500	13500	77500	60264		
COM (OR FILMED) CATALOG									
ENTERING NEW TITLES	1500	1500	1500	1500	1500	7500	5683		
DATA STORAGE: NEW	1125	2450	2850	3250	3650	13325	5672		
DB MAINTENANCE: NEW	3375	7350	8550	9750	10950	39975	29023		
CATALOG PRODUCTION									
NEW	40976	81482	96091	111399	127407	457353	331980		
SET UP FOR DISPLAY									
NEW/UNIFIED	840	960	1080	1200	1320	5400	4005		
READERS									
ACQUIRE AND INSTALL	4075	4075	4075	4075	4075	20375	15445		
SPACE	4375	5000	5625	6250	6875	28125	20871		
MAINTENANCE	875	1000	1125	1250	1375	5625	4172		
SUBTOTAL	57141	103817	120896	138674	157152	577680	420851		
TRAINING, ORIENTATION									
T.S. STAFF	6750	3300	0	0	0	10050	8863		
P.S. STAFF	3250	1600	0	0	0	4050	4276		
USER ORIENTATION	1500	800	800	800	800	4700	3667		
SUBTOTAL	11500	5700	800	800	800	19600	16806		
CATALOG USAGE BY NC STAFF									
	29875	30333	30542	30667	30792	152209	115237		
COST ADJUSTMENTS									
PERSONNEL	0	0	0	0	0	0	0		
SPACE	0	0	0	0	0	0	0		
EQUIPMENT	0	0	0	0	0	0	0		
MISCELLANEOUS	0	0	0	0	0	0	0		
SUBTOTAL	0	0	0	0	0	0	0		
GRAND TOTAL									
	754233	831829	839238	852729	867416	4145445	3124632		

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## LIBRARY CATALOG COST MODEL

LIB - TYPICAL ARL LIBRARY  
RID - 001M OLD CARD, NEW COM  
DOS - SEPT. 10, '78  
ALT - 5, SPLIT CARD/COM

	FISCAL YEAR				
	1981	1982	1983	1984	1985

NUMBER OF TITLES					
TOTAL IN LIBRARY	828000	856000	884000	912000	940000
OLD FILE	813000	811000	809000	807000	805000
NEW FILE: MR	225000	265000	305000	345000	385000
NUMBER OF HEADINGS					
TOTAL IN LIBRARY	662705	684427	706210	728049	748936
NUMBER OF CONFLICTS	1307	2338	2193	2061	1842
% IN CONFLICT	12.6	11.8	11.2	10.5	10.0

181

## COSTS (IN DOLLARS) WITH INFLATION RATE - %

	FISCAL YEAR					TOTAL	PRESENT VALUE
	1981	1982	1983	1984	1985		
CATALOGING, EDITING							
INITIAL CATALOGING	510000	510000	510000	510000	510000	2550000	1833298
AUTHORITY CONTROL	16280	16840	17400	17960	18520	87000	65554
EDITING							
OLD	16205	16240	16200	16160	16120	80925	61369
NEW: MR	844	3675	4275	4875	5475	19144	13743
SUBTOTAL	543329	546755	547875	548995	550115	2737089	2073964
ADDITIONAL AACR-2 COSTS							
RESOLVING CONFLICTS	3268	5844	5482	5153	4855	24602	18450
CHANGING HEADINGS	50978	91163	85512	80394	75742	383789	287869
PROVIDING LINKAGES	0	0	0	0	0	0	0
SUBTOTAL	54246	97007	90994	85547	80397	408391	306319

(Continued)





## MANAGEMENT OVERVIEW

Patricia Wilson Berger  
Chief, Library and Information Services Div.  
National Bureau of Standards

When Chris Eynon called to ask me to speak at this session, she was very persuasive indeed; she even suggested my task would be an easy one. "Just give us a general overview of what management decisions are necessary to close a card catalog," she said. I agreed to undertake the assignment, and much later realized that shutting down a venerable institution is neither simple nor uncomplicated. Indeed, it involves a number of determinations about how cataloging information should be packaged and where, as well as how, bibliographic information will be retrieved by future library staff and patrons.

Why all the current interest in this subject? I believe the recent acceleration of discussion and debate derives from several conditions and events which determine, or will soon determine, the effectiveness with which American libraries provide information to their clients.

- o First, those of us who subscribe to OCLC's automated cataloging services through FEDLINK no longer rely on card catalogs for verification of orders, interlibrary loan queries, or even simple reference checks. It is faster, cheaper, and far more reliable to enter a simple OCLC search key and call up the bibliographic record on-line than it is to thumb through several hundred 3x5 cards, trusting that the one needed is filed, and, just as importantly, filed correctly. Why then should we continue to provide only manual catalogs for our users, when we know first hand how much more efficiently information is retrieved from automated records?
- o Secondly, we all know that cataloging is one of the most technically difficult, and therefore one of the most expensive of library operations. To help us control cataloging costs, since 1915, Library of Congress has provided U.S. libraries copy of new or revised bibliographic records added to their catalogs. It is this L.C. and N.U.C. data which is formatted in MARC records and accessed by all of us, either through OCLC or through purchase of the Library's printed catalog cards. Certainly, we have profited from this arrangement with our quasi "national" library. Still, for many years, we have been painfully aware of L.C.'s inability to adjust to changing times. For example, because the costs associated with updating thousands of manual records was considered prohibitive, L.C. resisted changing its subject heading from "Electronic Calculating Machines" to "Computers" long years after International Business Machines had converted to IBM. The dilemma is further compounded when one considers the formidable records alterations L.C. forced on American libraries when L.C. changed its subject heading "Negroes" to "Blacks." The point of all this is that the information produced in a society which is characterized by frequent and rapid sociological and technological change can no longer be codified, much less retrieved, by manual systems devised for earlier, quieter times.



- o Happily, L.C. has found a way around this paradox of being titled a leader but unable to lead, and this brings me to a third event. In 1981, for better or for worse, L.C. will close its card catalogs. After that time, subject headings will be created and revised entirely on-line - and this circumstance should provide the national cataloging accuracy and currency we all seek. However, the 10,000+ American libraries which depend on L.C. for their subject headings and other cataloging protocols have yet to resolve how they will maintain and update their card catalogs after the L.C. closing. It is possible that sufficient pressure from the library community will persuade L.C. to continue providing cross references and other updates for the older subject headings represented in the closed catalogs. But even if this happens, incorporating these changes and entries into existing card catalogs will continue to become more and more costly for American libraries.
- o This leads to a fourth condition, which has to do with why you should consider closing your card catalog within the next several years. Joe Rosenthal of the University of California at Berkeley states the case simply, "Card catalogs are wasteful, stultifying and expensive wastes of human resources, which inhibit the improvement of information services." I would add also that for those of us who manage small or medium size special libraries, present costs to maintain card catalogs are excessive - the process saps far too many of our dollar bills and far too much staff time for a less than optimal product which is choked with trivia and isnomers and is, therefore misleading from day one. In contrast, automation of the cataloging process, coupled with automated catalog production provides an opportunity to control the time and labor required to prepare, create and manipulate bibliographic records while simultaneously enhancing the accuracy and usefulness of the library's catalogs to patrons and staff alike.

The changes I have stipulated regarding the production and ultimate condition of future catalogs in American libraries really do not represent a radical departure for any of you. I dare say most of you became aware of chronic deficiencies in your catalogs as long as 20 years ago, and many of you began instituting remedies at that time. For example, the first time you undertook a separate listing of your journals, or the day you decided to participate in the DDC shared cataloging experiment, or the times you joined forces with other libraries to create union lists or catalogs, you were tacitly acknowledging the inadequacies of card catalogs as major retrieval tools for many library operations and services.

These deficiencies will persist and multiply in the years to come; therefore, it is time to plan for the orderly closing of card catalogs and the substituting of useful, effective and affordable guides and access methods to library information resources.

But if your library, like most special libraries, functions in an environment of tight deadlines, a slim staff and limited budgets, then much as you might like to, no way can you shut down all, or even all of one, card catalog on the same day, or at the same time. For, in addition to your "public" catalogs you have also to consider converting:

- o The subject and author authority files we considered earlier
- o Shelf lists
- o On-order and in-process files
- o Serials records or serials check-in files
- o Special catalogs, such as technical reports catalogs
- o Special accessions/deaccession lists, or any other files you must keep for security reasons

As to where to begin - be guided, as you have been in the past, by undertaking to convert those catalogs first which are most pesky and also most possible. I doubt that you need help to identify when a catalog is pesky, which means it must be maintained but it is more trouble than it's worth. The conditions which make conversion of such a catalog possible include:

- o The availability of some or all of the records in your catalog in another form; for example on microforms or on machine-readable magnetic tape.
- o The ability to obtain the catalog, or portion of the catalog in another format; for example, it may make sense to negotiate with one or several commercial firms or government depositories, like OCLC, Informatics Inc., DDC, NTIS, or GPO, to purchase some or all of the bibliographic records you need.
- o The availability of a large bibliographic resource file, such as OCLC or DDC, which you can use as a master, and from which you can obtain the records you need for your catalogs. Without such a file, you are obliged to create each and every bibliographic record from scratch, and few if any of us can afford such an undertaking. With such a file, if your holdings are largely in the open literature and number  $\geq$  250K, your records "match" with the resource file should be  $\geq$  70%.
- o The availability and commitment of agency contract money, or alternatively, in-house capability, if for security or other reasons you must produce most of your records without recourse to external data resources.
- o The availability and commitment of regional, agency-wide or national consortia of libraries and information centers which might also be interested in prompt conversion of the same catalogs which are causing you grief.

Clearly, your group represents the national consortium of military librarians, and I suspect that most if not all of you can answer "yes" to several of the other conditions which make conversion of card catalogs a viable possibility.



Therefore, we need to talk about how closing a catalog and automating its production will affect library services. Today, machine-generated library catalogs are available in three forms:

- o As books, printed and bound, not unlike the library catalogs of the 18th and 19th centuries, which we learned about in library school.
- o As COM (computer produced microforms) documents, which require special readers.
- o On-line, which requires special terminals and special protocols (card catalogs also require the latter) for access.

All three formats can provide many more retrieval tags than were ever possible with a card format. In addition, all three allow for duplication of the catalog contents at multiple locations and for relatively small dollar increases. That's the good news. The bad news is:

- o Book catalogs can be prohibitively expensive to publish and very quickly become prohibitively cumbersome to cumulate as well.
- o COM (computer output microform) catalogs are cheap to produce and reproduce, but they require special microform readers, plus a considerable measure of user patience, because COM is not adapted to rapid reader scanning or browsing the catalog, even though it can increase user access points by a factor of 10.
- o On-line catalogs are accessible only in areas supplied with data terminals and communications links. On-line catalogs require that library users learn special protocols to obtain access.

Let's assume you have decided which of these formats best fills the needs of your library's users and staff. Let's also assume that you have decided, like 99.9% of American librarians, to automate the public catalogs first. You are now confronted with yet another decision tree.

- o To quote Art Plotnick in American Libraries, will you "close the old catalog by date of imprint or date of cataloging; that is one of the first tough questions. Closing by imprint makes the decision clear and easy to explain: items published 1980 and after. But since older imprints continue to flow into a library, two cataloging systems must be maintained."
- o Given the above dilemma should you solve it by converting your older records? Some authorities suggest that if your collection (and this could mean the combined collection of a consortia) is  $\geq$  250K "open" titles, conversion makes sense.
- o If you decide not to convert older records, how will you handle older serials?

- o What should be the format of your new catalog(s)? Does it make sense, in an automated environment, to divide a catalog? Should you stick to subject headings or employ index terms as well? Should some subset of records be produced as KWIC or KWOC indexes?
- o Should your records be formatted in full or abbreviated MARC or COSATI? How many of a record's data tags need to be searchable?
- o How frequently can you update the catalog? Will the updates be supplemental or cumulative?
- o How will you handle non-Roman alphabet records?

Once these considerations have been resolved, it is necessary to examine their impact on your Library's ability to perform and produce. As a manager, you need also to determine:

- o How will catalog(s) conversion change your future space, facilities and equipment requirements? Will you need additional data terminals, microreaders, communications links?
- o What are the training and retraining implications for the library staff?
- o What disruptions to user services can be anticipated and what steps should be taken to minimize the impact?
- o How will conversion impact
  - library loan service
  - formal networking arrangements
  - agency agreements with state and local governments or the private sector
  - your operating budget(s)
  - your staff recruitment program?

I will end my management overview presentation at this point. It is clear from the rest of the speakers scheduled to address you that several of them will describe what I have come to call the "milestone march." Therefore, it is not necessary for me to include it in this presentation.

Library literature abounds with excruciating detail regarding catalog automation and closing in various kinds of libraries. For example, in 1978, the Systems and Procedures Exchange Center of the Association of Research Libraries issued their Kit 46, entitled, "Planning for the Future of the Card Catalog." The Kit numbers 161 pages and includes the plans and summaries of ARL's members regarding the future of their catalogs and an extensive bibliography on catalog automation. In addition, Oryx Press has just announced publication of the proceedings of ALA's Library and Information Technology Association (LITA) institutes on the subject. The first was held in November 1978, and the second in February 1979. The Oryx volume retails for



\$16.50 and is entitled, Closing the Catalog. And finally, Special Libraries Association recently announced a one-day workshop entitled "Automated Cataloging: Access to Systems on the Market." The workshop will be limited to 100 participants and will be held at the Washington Hilton, Friday, November 30th from 9-4:30.

My thanks to each of you for inviting me to participate in your deliberations and my best wishes for your success in restructuring your catalogs. Again I urge you to continue what you began many years ago when you first discovered the card catalog's deficiencies. Plan well, scheme, and don't wait to be overtaken by either events or catastrophe!



*"Then what happened? I mean after he dropped your Arabic card file."*

## DATA CONVERSION

Ruth Mullane  
Army Library

I hope that I'm not here under false pretenses. Had Chris invited me to participate in this year's discussion of data conversion at the time of last year's MLW I would have accepted without hesitation, presuming, of course, that we would be able to adhere to our original schedule and that by now in 1979 we would have gained a great deal of experience to share with others. Those of you that have been involved in the automation of a library function will, I'm certain, sympathize with our failure to conform to the schedule we had originally established. We are running about a year late but considering our situation we are not discouraged and have actually begun the initial implementation stages of the ILS or Integrated Library System. Our data conversion is really just getting under way.

The ILS is a system prototype developed as an R&D project by the LHCBC at NIM with the Army Library serving as the test site for the circulation subsystem. Some of you may be familiar with this project which is now in its second year. For those of you who aren't, perhaps the others will bear with me for a moment while I give my 10 cent briefing on the background of the ILS.

It is pertinent and will provide a clearer understanding of our approach to data conversion.

The ILS purports to be exactly what it is called--an Integrated Library System. The project was initiated with an interagency agreement whereby GSA contracted with LHCBC to develop a circulation system for the Army Library. The Army Library had identified circulation as its most critical need but decided against negotiating with a commercial vendor because of its unique requirements and the costs at the time. This all took place about 4 years ago before the commercial systems were as advanced as they are now.

The ILS is a minicomputer/microprocessor based total library system capable of supporting circulation, acquisitions, cataloging, reference, SDI, and management control. The kernel of the ILS is an integrated or master bibliographic file--one file of bibliographic information which supports all of these functions. The integration of functions is also fostered by a master bibliographic file, for the addition of bibliographic acquisitions data may also serve to create the bibliographic portion necessary for the circulation function and provide partial entry required for the cataloging function, etc.

I won't discuss the features of the circulation system since there isn't time and it isn't the reason for my participation in this group.

Regardless of function and as we progress, our original goal of circulation seems almost incidental since the secret to success in the project and the real cause of anxiety has been data conversion. We have wrestled with the problem for 18 months now and are still altering decisions and feeling our way.

The ILS enables us to load our OCLC tapes to create our own local data base. We have been receiving them on a weekly basis for a year now so we do have something to work with.



I invite you to shoot me down in our approach to our particular data conversion project because we are, in the beginning, doing things in what may seem an unusual manner.

First of all let me describe our situation:

(1) We have to convert our data in-house at least for now. There is an Army Regulation that forbids us to expend additional money on an ADP project until it is fully operational. Therefore, until we have system-start-up we are on our own.

(2) We want to convert our data in-house at least for now so that we can develop our own processing and work-flow procedures which are rather varied and contingent on different situations. At this point we could never contract out for the unusual needs we require and we don't have the money to hire additional people.

(3) I know that many libraries are able to conduct their data conversion activities behind the scenes away from the patrons and without any obvious change in library service. We can't do that since our first priority is the implementation of a circulation system and our record conversion priority is contingent upon the circulation of items. In a way, our patrons are involved in the process and I think it's a good thing. They will keep us honest and we can't hide our mistakes.

(4) Our conversion process is threefold:

a. Conversion of patron records--Heretofore we did not register patrons and issue cards so this function is brand new to Army Library operations. The patron merely had to sign his name, office phone number or organization symbol to a book card and both book and patron were seldom seen again. Since the first commandment of the ILS is that it be user-cordial we wanted to design a patron record that would assure easy registration and data entry while containing the minimum information required by the system. User-cordial has been the watchword since the beginning--if any element of the system isn't meaningful to the patron and easy to use, it has to be redone. One of the most attractive attributes of the Lister Hill staff is their insistence that the user be given first consideration. It took 18 months to design this record and we are very satisfied with the results. The patron can register in about a minute and it takes less than a minute to input most records. Staff training has gone surprisingly well and after 1-2 hours of training and practice at the terminal we have found that most staff members developed real facility with the system. This is the only phase of data conversion we have available for demonstration this week.

b. Periodical records--We do not catalog our periodicals and they circulate very heavily. One of our problems in obtaining a commercial system was that when they were being evaluated it was discovered that the vendors did not address periodical circulation. I presume that has changed by now since this took place 3 to 4 years ago. This is a real problem and a real data conversion headache because we have to create master bibliographic records from scratch. The ILS will enable us to do this and we are delighted to be given an automated serials check-in capability to support this circulation function. We are using bar codes in the circulation system so this processing step is an integral part of our data conversion process. Briefly the ILS will enable us to create a master bibliographic record for each periodical title. It will include the name, frequency, ISSN, CODEN, special



messages, subject information and date of 1st issue. When issues are checked in the master record is accessed, an activity record for that issue and bar code are generated and the item is ready for circulation. This is not a full serials module, but we plan to complete it later. Again, this will be completed in-house.

As I explained, our conversion is threefold--two parts, the master patron record and periodical records can for the most part be created in advance of system start. Of course this is an on-going process but we think we can handle it. We have as I described above, already begun work on the patron records and at the rate we are progressing we feel reasonably certain that they are under control. We will be able to create 2-3000 master periodical periods in the next few months when that capability becomes available. One of the subcontractors is in the process of finalizing serials check-in now.

c. I saved the best for last--the conversion of our monographs and serials. As I mentioned above, we will use our OCLC tapes to form the nucleus of our own local data base, another very attractive feature of the ILS. We will, however, have to edit the records--by reviewing each OCLC record, creating a master bibliographic record and creating an activity record which will contain shelf list information and the bar code. The ILS is going to offer us full subject search capability so we will also be developing an authority file.

We have just begun to look at our OCLC tapes and I have brought a sample with me if you would like to examine it. I have been awaiting the viewing of the tapes with great anticipation because their content and condition have been such an unknown factor in our data conversion plan.

We recognize that this is a devastating workload, but with the following plan based on an examination of the tapes, several discussions about the options available, and general observations of the ILS as developed thus far we think we have devised a fairly systematic approach.

(1) We plan to load all the tapes at once and sort them by shelf list order into a single file. This will make it easier to catch the most recent OCLC updates and changes and easier to use our manual shelf list.

(2) They are going to extract a list of all the subject headings so we can edit them, check the see from references for currency and accuracy and then reload the list as an authority file. We are excited about the subject search capability offered by the ILS. As well as the LC subject headings, the project team has designed a free text capability in subject and series searches so that the user won't be restricted to the LC hierarchy. We hope to complete the subject editing before system start also.

(3) We are quite pleased with the appearance of the tapes thus far. We confess to a need to make quite a few adjustments and corrections in many of our records to assure consistency. We have participated in OCLC since 1974 and we need to reflect the current OCLC practice in the early records. We are having some difficulty in working with the fixed fields and the variable fields are not, as you can see, formatted in the same order we are used to. There are also some strange characters scattered throughout some of the records which we can't identify.



(4) Lister Hill still has some work to do on the tape editing capability, but we hope to be able to work on the subject headings first and then address the remaining parts of the record when they have eliminated these problems.

If we were creating a local data base for use at a future date we could probably work on this project behind the scenes--and at our own pace, but as I have mentioned before, we have to circulate these items which means that the bar code process must be worked into the data conversion process.

There isn't time to go into an explanation of the evolution of our bar code, but it has been a very crucial element in the development of the ILS. Both our patron and item records will have bar codes which contain meaningful as well as random information. The application of the bar codes in this particular design enhances our response time, generates many useful reports, and simplifies the software design.

Our data conversion includes both editing of the OCLC tape and the application of the bar code.

We have to consider a rather complicated scenario in charting the process since several options are possible for any item.

(1) An item is bar coded and processed in the Army Library data base. That makes me happy. When I can say that about the entire collection, I'll know I can take leave.

(2) An item is not bar coded and not in OCLC. In this case we have to make a decision whether or not to input it to OCLC recognizing that it must be bar coded and included in the local data base.

(3) An item is not bar coded and is in OCLC. In this case the record must be edited and bar coded.

(4) In the case of OCLC records corrected and put in the Army data base, a decision must be made about updating the OCLC data base if applicable.

(5) Items will circulate even if they haven't been bar coded. Bar coding and conversion will take place when they are returned.

(6) Some items, which are bar coded, are only partially cataloged, thus creating another decision making process. These are just some of the confusing possibilities that exist. We plan to concentrate on the conversion and bar coding of the newer materials since studies show us that circulation is heaviest in these areas. If we can keep up with these we will tackle retrospective conversion as a second priority.

I do not doubt that several months into the project we will make some decisions about outside assistance to complete the project--whether it is to contract out, use BNA, hire additional staff, etc.

Our ultimate goal, of course, is the full conversion and bar coding of the complete collection.

We will have full on-line search capability and ultimately use terminals to replace the public catalog. For back-up we will probably ultimately go to a COM catalog but we have as of yet done nothing in that direction.

Once our records are edited they will be as fully searchable as the cards and the growth of our on-line catalog will be commensurate with the speed of our record conversion. During this time we are resigned to the continuation of cards for the new books which is redundant but we feel we are not prepared to close the catalog until we have completed 6-12 months of data conversion and have resolved our back-up problem.

Since our system is a prototype, an R&D effort, and a combination of contract and in-house work, we have found that our success with the project is to take one step at a time. We can't take on a COM catalog project at this stage so we are deferring until we have our own conversion and bar coding process under control. For us the lesser of two evils is to continue with the cards for the near future even though we will have to duplicate some effort.

I have a copy of our conversion plan which was subcontracted to Mitre Corporation for development. There have been some changes and there will be more, but it has been a very useful document. It should be available through NTIS eventually. Unfortunately, I don't have enough copies to distribute.

If you are interested in learning more about the ILS I urge you to visit the library on Friday afternoon. Bill Ford, the brains behind the ILS, will be there to answer questions and provide a more technical briefing.

We are very excited about the ILS and have great confidence in its success. We recognize, however, that we will and can anticipate some terrible problems and I'm afraid I expect them in the area of data conversion and bar coding. So far we are pleased with the patron record conversion and are reasonably confident that we can handle the periodicals. I'm afraid it will be the tape conversion that will award me my long awaited nervous breakdown. I hope I'm wrong.

For those of you that are interested in the specifics of the hardware and software OS, the system will operate on:

- a. Data general eclipse mini and disk
- b. Pentronics line printer
- c. Hewlett-Packard terminals
- d. Markham bar code printer
- e. Intermec bar code readers
- f. We will utilize the Z-39 bar code system which can accommodate both alpha and numerics and provides a great deal of flexibility.
- g. The system is to run on MIIS, a spin-off MUMPS which is a powerful text data base language and very efficient with MINIS.



h. The MIIS operating system will come from MEDITECH.

We have upgraded an area in the library which contains the temperature, humidity control, wiring and other accoutrements required to keep a data processing system happy.

If you have any questions I will be happy to try to answer them.

## DEPARTMENT OF ENERGY'S SYSTEM

Ruth Perks  
DOE Library

For less than the salary of a GS-7 library technician the Energy Library at the Department of Energy has maintained its catalog on-line as a private file at SDC for the past 2 years. We have recently offered access to this catalog to the Federal library community and as a result of that offer I was asked to speak today.

I hope I won't be in the position of the librarian who met a friend at a conference and was asked "What's new with you." The librarian gushed "We've just had our new budget approved and we got more than we asked for." Her friend said "Fantastic." "And" enthused the librarian "we are getting more space and completely redecorating the library." Her friend replied "Fantastic." The librarian continued "We've closed our card catalog and we have a marvelous new automated system." Her friend replied "Fantastic." The librarian paused and asked her friend "What's new with you?" "I just got back from a 2-week course in 'Management Development Training,'" her friend stated. "Oh" said the librarian "What did you learn there?" "I learned how to say 'Fantastic' instead of 'horse feathers.'"

I believe that the on-line catalog really is fantastic and I'm hoping to explain how the Energy Library evolved from the card to book catalog to an on-line catalog, what some of the benefits and some of the problems have been, what our future plans are, and a brief discussion of some of the costs involved.

First, some background. The Energy Library is in three physical locations in the Washington, D.C. Area--one branch library being at 20 Massachusetts Avenue, another around the corner serving the Federal Energy Regulatory Commission, and the third branch in Germantown, MD. We have centralized technical processing and decentralized collections and reference service. The collection is an amalgamation of the Atomic Energy Commission, Energy Research and Development Administration, Federal Power Commission and Federal Energy Administration libraries. We only catalog items which we can't fit into and retrieve from our journal, GPO depository or technical report collections. Thus our cataloged collection consists primarily of trade monographs and serials, society publications and proceedings of conferences.

The Energy Library naturally gravitated towards an on-line catalog. For many years the library's only subject access to its technical report collection has been the bibliographies and products of the DOE Technical Information Center and NTIS, such as "Nuclear Science Abstracts," "Energy Research Abstracts" and "Government Reports Abstracts." Since 1968 we have had on-line access to these reports through the department's RECON system. Our reference librarians are probably more at ease going to a terminal as they are picking up a printed index or going to the card catalog.

I've listed some milestone dates for the DOE Library in its progress from the card catalog to the on-line catalog. In mid-1974 we closed the card catalog and started our present book catalog. The book catalog is produced by a program called "MAP" (Marc Applications Package). This program was purchased in early 1974 as a turnkey system and is run on DOE's IBM-370 in the Computer Center. This system was the original core for all our automated cataloging.

See Viewgraph 1



In 1976 we purchased the prototype MINI MARC system from Informatics, Inc. MINI MARC is a stand-alone minicomputer with a MARC data base on floppy disk and indexes to the data base on a ROM microfilm reader. When we catalog a book which has a MARC record available, we display the MARC record on the screen of the MINI MARC, make any editorial changes necessary for our local library record, and write the revised record on a user disk. The MINI MARC also provides an on-line worksheet with MARC tags which can be used to create catalog records for titles not found in the MARC data base.

In early 1978 we installed the LIBS-100 system for circulation and inventory control. We also started sending tapes of our book catalog to SDC, which converts the MARC record to ORBIT IV format for searching as our private file "POWER." During 1978 our cataloged data base more than doubled as we integrated the FPC and FEA collections with the existing data base.

During 1979 we have been converting the Atomic Energy Commission card catalog to machine readable format and integrating those records into the catalog.

See Viewgraph 2

At present our cataloging flow is somewhat complicated. This flow chart shows how our cataloging records are built from book to on-line catalog record.

When a book arrives in cataloging we first check to see whether there is a record for it in the MINI MARC data base. If not, we search OCLC for a record which we will modify and rekey. Only if no record is found do we input an original cataloging record. At present original cataloging represents between 10 to 20% of our cataloging effort. We update the LIBS-100 record daily using the MINI MARC record. Once a month the MINI MARC floppy disk records are converted to tape and used as input into MAP which produces the book catalog and the tape used for reloading our data base on SDC for the on-line catalog. Although the SDC tape has to be sent to California and our file must be reloaded we often have the updated catalog on SDC several days before we finally get the printed catalog for our users. We are currently cumulating each update before printing our catalog. We hope to move completely to the on-line catalog on the LIBS-100 before it becomes necessary to go to basic volumes and supplements.

See Viewgraph 3

This viewgraph shows a MINI MARC local record. In this case you can see we have added 090 local classification number, 690 local subject headings, and 985 local holdings to the original MARC record.

See Viewgraphs 4 & 5

The following two viewgraphs show the same record in the LIBS-100 as it appears in an "inquiry" and in a "titlelist." You will note that in both cases the record is very similar but it is formatted slightly differently. The record indicates that DOE Library owns one copy which was on the shelf at our 20 Massachusetts Avenue Branch Library when the record was retrieved.

See Viewgraph 6



We shall now follow a different record as it appears in the book catalog and on SDC. In the book catalog the most complete copy of the record is the shelflist record which is filed by the book's classification number.

See Viewgraph 7

Here is the same record as it appears in the author/title section of the book catalog. Since Stobaugh was listed as an added entry there would be another record in the author/title catalog under Stobaugh and one under Harvard Business School.

See Viewgraph 8

The book catalog also has a title key-word index which indexes under any word appearing in the main title which is not in the stop list. In our library "energy" is a stop word for the purposes of this index since we would get so many entries indexed under it that it would be almost useless.

See Viewgraphs 9 - 11

Now I will show a short SDC search for the same record. And the full and default formats of this record as it appears in SDC.

See Viewgraph 12

You may be wondering why we are retrieving the same record from so many different systems. I hope this chart will make things clearer. The LIBS-100 system was originally purchased as an inventory and circulation control system. The only records we could put into it were abbreviated and appeared similar to the amount of information you would find on a checkout card in the back of a book. Although this abbreviated record was accessible only by an author/title key or by classification number, we almost immediately discovered that we had finally closed the gap between the time the book was on the shelf and the time the catalog record was available. This had been as long as 6 weeks in our library and I understand that 3 to 4 weeks is not uncommon for OCLC users. Even if you still produce your own cards there is usually a significant delay between the creation of the unit record and the appearance of all the cards in the card catalog. Since we update the LIBS-100 record daily it is only a matter of hours between cataloging the book and being able to retrieve it from any of our three locations. The new software allows us to retrieve a record by main and added entry, title, series, note, call number, author/title key up to six subject terms and by control number--all of the retrieval points you would expect to have with a card catalog record plus.

The book catalog offers all of the above access points except notes and control number. In addition it offers keyword access to the main title. Our current plan is to upgrade all of the present LIBS-100 catalog records to full format, add the records for reference books which were not originally included in LIBS since they did not circulate, and add the holdings information for approximately 8,000 titles which were in the original book catalog before we started LIBS-100 input. The next step will then be to purchase between six to eight touch terminals which we will designate as "query only" terminals since they will not allow changes to the data base. These touch terminals will be distributed among the three DOE library locations and we will stop the production of the book catalog.



Since the SDC on-line catalog gives us key-word access for main entry, added entry, notes, series, title, subtitle and subject headings as well as right hand truncation, variable search characters and full Boolean search capability we plan to continue the SDC catalog in the foreseeable future. Another reason for continuing the SDC catalog is that it is an easy way to make our catalog accessible to other DOE and Federal libraries throughout the United States, something we would be unable to do with the current hardware limitations in the LIBS-100.

What are some of the problems we have encountered on our way to the on-line catalog? First you need to constantly educate your patrons. You must make them aware of the existence and the advantages of the new forms of the catalog. My branch, in Germantown, is the only place in the Energy Library which still has a card catalog. We have large signs pointing to the book catalog which indicate that the information in the card catalog is at least 5 years old. But we still have to approach new patrons, lead them away from the card catalog and show them the book catalog. Once the card catalog is removed, patron acceptance of the book catalog is positive. I was at one of our other branch libraries during the time that we made the transition from the card catalog to the book catalog. I expected some complaints the week we removed the card catalog from the branch since I always noticed one or two people using the card catalog. However, there were none.

Another problem is patron access points and how to handle simultaneous users. While theoretically each drawer of the card catalog is a patron access point, in practice one patron using the catalog will hinder the use of the drawers blocked by his body as he uses the catalog. Our book catalog is available in each of the branch libraries, usually in two sets--one for the staff and one for patron use. Each set contains approximately 20 volumes, each of which could be considered an access point, although the title KWOC index and the author/title volumes are the most commonly used by the patrons. There have been some interesting studies done on patron access points by libraries which were considering "COM" catalogs. Access points for the on-line catalog will be equipment and hardware bound and we may find ourselves with some queuing situations when our book catalog is discontinued. On the other hand, two patrons at two terminals will be able to access records which would have been filed next to each other in the card catalog.

We will certainly have to invest some staff time in instructing patrons in the use of the touch terminals when we make the next transition. This probably will be a plus since it gives a chance for us to give a short orientation to all of the services offered by the library.

Down time and file unavailability on the LIBS-100 and SCD are both very real concerns. So far, our experience with the vendor and equipment maintenance has been fairly reasonable. Because we will be keeping our catalog on two different systems we have a better probability that we won't be in a position of having no access. We copy onto a new disk all of the previous day's transactions of the LIBS-100 to ensure against permanent loss of data.

As I indicated at the beginning of my talk, the costs of maintaining our catalog on-line at SDC are not exorbitant and we expect to be able to lower the costs even more. Once you have your catalog in machine readable format in MARC or MARC-like records it is quite feasible to have your catalog searchable as a private file on



one of the big three systems vendors. You will be able to retrieve answers to questions which were previously unfindable and tailor-make bibliographies from your catalog in a matter of minutes. The Federal Library Committee has just negotiated a contract with BRS for private on-line files based on OCLC tapes which looks extremely reasonable. The costs of a private file will depend on the following elements: There will be a one-time programming charge for converting the data to the format used by the search system vendor which is chosen. There will be central processing unit and disk storage charges based on the number of records or number of characters being maintained. There will be reload or update charges based again on the number of records being processed and finally there will be a search charge at the vendors nonroyalty rate and telecommunications charges. Our catalog at present consists of about 24,000 records and it has been costing us about \$1000 per month to maintain it on SDC. In comparison it is now costing us about \$2250 for each update to the book catalog so you can see why we feel the on-line version is so very reasonable. We estimate that we would need at least 3 more library technicians if we were trying to maintain a card catalog at all three locations. I was interested to read in the National Library of Medicine News, July 1979, that NLM now plans to close its card catalog. They estimate that it will be cheaper to convert 300,000 nonmachine readable records into computerized format than to maintain their card catalog for another 5 years.

Another argument for the automated catalog is the management flexibility it gives you. Since we automated the catalog we have had one branch library become independent (Nuclear Regulatory Commission Library) and have added two more branch libraries. We can easily either add more branches or have our catalog available in various offices throughout the department, with the automated catalog. We have no current plans to close the catalog again because of AACR II. The automated catalog allows you to use text processing methods to make changes which become necessary because of the new rules.

I believe that the advent of AACR II and the possibility that many libraries may decide to close their present card catalog and go to an automated catalog is an opportunity for the profession. It may be time for us to get our feet wet and stop talking about the automated catalog and start producing it. We don't want our patrons to be like the man who was newly married to a systems analyst. A couple of months later he went to see a marriage counselor. The counselor asked him what was wrong and the man said "She's a great cook, a marvelous companion and very good-looking but our marriage has never been consummated. All she does is sit on the edge of the bed every night and talk about how good it is going to be." I believe it's time we consummate the on-line catalog.



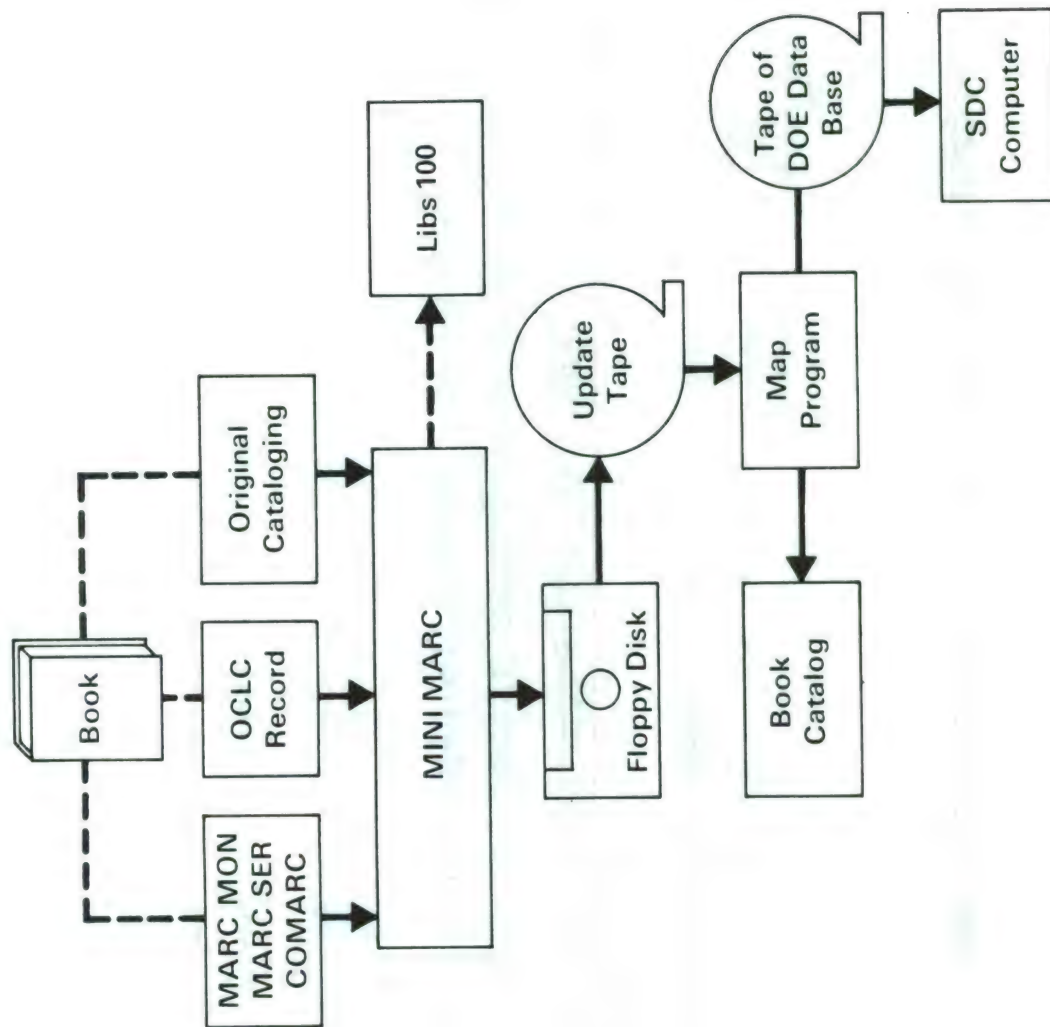
# **Access to Cataloging Records**

## **Milestone Dates at DOE Library**

- 1974 Closed Card Catalog — Started Book Catalog**
- 1976 Started MINI MARC Production**
- 1978 Libs-100 and SDC On Line**
- 1978 FPC & FEA Collections**
- 1979 Completed Conversion of Card Catalog**

Viewgraph 1

# Access to Cataloging Records



Viewgraph 2



## MINI-MARC LOCAL RECORD

001 78019238  
 008 s1979 okua b 00110 eng  
 050 0 TN870.5 @b .D52  
 090 TN870.5 .D55  
 100 10 Dickey, Parke Atherton, @d 1909 —  
 245 10 Petroleum development geology/@c Parke A. Dickey,  
 260 0 Tulsa, OK : @b PPC Books, @c c1979.  
 300 x, 398 p. : @b iLL. ; @c 24 cm.  
 504 Includes bibliographies and indexes.  
 650 0 Petroleum @x Geology.  
 690 Geology — Petroleum.  
 690 Oil and gas.  
 650 Oil well drilling.  
 985 Wc.1

# LIBS-100

## Inquiry Record

PROCESS?				
Function?				
INQUIRY				
Title?				
DICPDGE990				
TN870.5.D55				
Dickey, Parke Atherton, 1909—				
Petroleum development geology/Parke A. Dickey.				
78019238				
Pages: 398 p.				
SUBJECT 1: Petroleum — Geology.				
SUBJECT 2: Geology — Petroleum.				
SUBJECT 3: Oil and gas.				
SUBJECT 4: Oil well drilling.				
KEY	PUB	PUBYR	COST	
DICPDGE99		1979	\$0.00	
MC	ED	L.A.D.	V	
		9/24/79	N	
WAS 3 2050 00048 3245 ON SHELF 163 0				
INQUIRY				
Title?				
Title?				
Function?				



# **LIBS-100 Titlelist Record**

## **TITLELIST**

**9/24/79 9:21**

**CALL: TN870.5.D55**

**MAIN ENTRY: Dickey, Parke Atherton, 1909—**

**TITLE: Petroleum development geology/Parke A. Dickey.**

**PAGES: 398 p.**

**SUBJECT 1: Petroleum — Geology.**

**SUBJECT 2: Geology — Petroleum.**

**SUBJECT 3: Oil and gas.**

**SUBJECT 4: Oil well drilling.**

**CONTROL NO: 78019238**

<b>KEY</b>	<b>PUB</b>	<b>PUBYR</b>	<b>CST</b>	<b>MC</b>	<b>ED</b>	<b>L.A.D. V</b>
<b>DICPDGE99</b>		<b>1979</b>	<b>\$0.00</b>			<b>9/24/79 N</b>

**WAS 3 2050 00048 3245 ON SHELF 163 0**

# BOOK CATALOG: SHELFLIST

HD9502 .U52En219

Energy future/report of the Energy

Project at the Harvard Business

School. Robert Stobaugh & Daniel

Yergin, editors.

New York: Random House, 1979.

353 p.; 24 cm.

1. Energy policy — United States.

2. Power resources.

I. Stobaugh, Robert.

II. Harvard Business School. Energy

Project.

Wc. 1

Wc. 2

Wc. 3

Wc. 4

Nc. 5

----- 00008053



## **BOOK CATALOG: Authors and Titles**

Energy future/report of the Energy  
Project at the Harvard Business  
School. Robert Stobaugh & Daniel  
Yergin, editors. New York: Random  
House, 1979. HD9502 .U52En219

# BOOK CATALOG: Title Key-Word Index

## FUTURE

Adequacy of future electric power supply	-----	HD9685.05Un36
•		
•		
•		
The energy crisis and the future	-----	HD9502 .A2326
Energy for the future :+	-----	Z5853 .P83B911
Energy future /+	-----	HD9502 .U52En219
Energy in the future	-----	TJ153 .P98
Energy in the world of the future .+	-----	TJ153 .H36
•		
•		
•		



## SDC SEARCH

USER:  
FILE POWER

PROG:  
ELAPSED TIME ON ORBIT: 0.01 HRS.  
YOU ARE NOW CONNECTED TO THE POWER DATABASE.

SS 1 / C?

USER:  
ENERGY/TI;FD FUTURE/TI;FD STOBAUGH;;FD 1 AND 2 AND 3

PROG:  
SS 1 PSTG (1690)  
SS 2 PSTG (226)  
SS 3 PSTG (1)  
SS 4 PSTG (1)

## **SDC RECORD — FULL FORMAT**

— 1 —  
AN — 00008053  
CALL — HD9502 U52EN219  
TI — ENERGY FUTURE/REPORT OF THE ENERGY  
PROJECT AT THE HARVARD BUSINESS SCHOOL.  
ROBERT STOBAUGH & DANIEL YERGIN, EDITORS.  
NEW YORK: RANDOM HOUSE, 1979.; 353 P.; 24 CM.  
SO — STOBAUGH, ROBERT.  
AE — HARVARD BUSINESS SCHOOL. ENERGY PROJECT.  
IT — POWER RESOURCES  
CP — WC.1  
CP — WC.2  
CP — WC.3  
CP — WC.4  
CP — NC.5



## **SDC RECORD — DEFAULT FORMAT**

**PROG:**

**— 1 —**

**AN — 00008053**

**CALL — HD9502 U52EN219**

**TI — ENERGY FUTURE/REPORT OF THE ENERGY  
PROJECT AT THE HARVARD BUSINESS SCHOOL.  
ROBERT STOBAUGH & DANIEL YERGIN, EDITORS.  
NEW YORK: RANDOM HOUSE, 1979.; 353 P.; 24 CM.**

**SO —**

**CP — WC.1**

**CP — WC.2**

**CP — WC.3**

**CP — WC.4**

**CP — NC.5**

## ACCESS TO CATALOGING RECORDS

	Libs-100	Book Catalog	Power on SDC
Direct Patron Access	No*	Yes	No
Full Library Staff Access	Yes	Yes	No
Trained Staff Searches	Yes	Yes	Yes
Key Word Access	No	Yes	Yes
Truncation	Yes	N/A	Yes
Variable Character	Yes	N/A	Yes
Holding Info	Yes (Jan '78 + )	Yes	Yes
Boolean Search Capability	No	No	Yes
Updated	Daily	Approx. Every 6 Weeks	Approx. Every 6 Weeks

\* Expected by July 1980



## A NOAA EXPERIENCE - FROM CARD CATALOG TO COM

Elwynda K. Chapman  
Chief, Analysis Section  
Library and Information Services Division  
National Oceanic and Atmospheric Administration

Presented by Frances Swim

The phrases "closing the catalog" and "freezing the card catalog" seem to imply that we are talking about the card catalog as a resource that is no longer needed. This interpretation of those phrases is often misleading, therefore, I would like to define those phrases as best I can. To "close a card catalog" means, in the context that has become popular today, that new entries will not be added to the card catalog, however, it will be maintained to the extent that existing entries will be corrected as needed and deletions will be made to reflect changes (discards) in the collections. The closed card catalog then remains an up-to-date, useful bibliographic resource to be used to complement other bibliographic resources, such as a newly created card catalog, a book catalog, a COM catalog and/or an on-line computerized catalog.

Library card catalogs are closed for many different reasons. Some examples are to phase out a cataloging system, to introduce new technologies, or to accommodate organizational changes requiring that one or more library collections be brought together. The anticipation of the Library of Congress closing its card catalog in 1981 for the purpose of implementing a new cataloging code, discontinuing superimposition, and converting to the use of an on-line computerized catalog, has generated excitement and unusual interest in the problems connected with closing card catalogs. The excitement generated by AACR II and L.C.'s decision to close its card catalog has been healthy for the library community. Many libraries were forced to think seriously about the merits of the card catalog, and to measure those merits against alternative access to the collection. Whether a card catalog is frozen and retained, or eventually replaced by some other form, is usually accomplished in stages.

In 1970, the library at the National Oceanic and Atmospheric Administration (NOAA) was faced with the problem of what to do about its card catalogs. The problem resulted from a major reorganization in 1965 that involved two of the oldest agencies in the federal government, and their library collections. The Coast and Geodetic Survey, created in 1807, and the Weather Bureau, created in 1870, were administratively combined. In addition, functions relating to meteorology and oceanography were transferred from other government agencies, which gave NOAA expanded responsibilities for oceanographic and fisheries resources. A newly formed Technical Processes Branch of the Libraries Division was given the task of acquiring and organizing the pertinent library materials. Although the existing library materials remained in different physical locations within the Washington, D.C. area, it was soon recognized that it was neither cost effective or efficient to continue the practice of two separate card catalogs with different and outdated cataloging policies and practices that had evolved over a period of 100 years or more. Neither was it feasible to merge the two existing card catalogs because of different classification schemes, different approaches to descriptive cataloging, different subject authorities, and different arrangements (i.e., dictionary vs. divided). Therefore in September 1971 it was decided to freeze the existing card catalogs and



start a new one, adopting, at the same time, a uniform cataloging system based on the Library of Congress system.

The primary objective of the uniform cataloging system was to eliminate all future variations in the cataloging function, to consider a retrospective conversion, and to prepare the data for machine handling. The bibliographic data was constructed in-house while a contractor was selected to code and input the data in the MARC format. A data base of machine readable cataloging records was begun for us by Inforonics, Inc. (Littleton, MA) in April 1972 for the new materials being cataloged, and from it they produced our overprinted catalogs cards, a monthly accessions list, and magnetic tapes containing the bibliographic as well as the holdings records. This cataloging operation continued until NOAA began using the OCLC system in December 1974. At that time, the cataloging staff took over the coding and input functions for monographs, and OCLC produced the catalog cards and the magnetic tapes. Serial titles continued to be input to the data base at Inforonics until OCLC was able to provide catalog cards for these. While the two data bases were growing, negotiations were started with Inforonics to produce a book catalog combining all records from the two tape sources. As far as could be determined, a merger of this sort had never been attempted, therefore, many of the problems were unique. Some of the problems stemmed from the differences between the MARC format as used by Inforonics and the MARC format as used by OCLC. Others were internally caused by seemingly insignificant things such as inconsistencies in the spacing of data which became very important in filing or sorting by machine. Some of our early records carried a library identification code of three letters while later records had four-letter I.D. codes. This discrepancy resulted from a systems change at OCLC and a computer program was required to make them print uniformly. Eventually, most of the problems were resolved and a printed book catalog of 12,670 titles was produced, covering the items in the card catalog for the period April 1972 through December 1975.

The production of this book catalog was considered an experiment as well as a valuable learning experience and was not intended to replace the card catalog. It also served as a supplemental reference tool which could be easily distributed to our field libraries where on-line terminal equipment was not available and where it was used for selection and interlibrary loan as well as a source of cataloging data.

To recapitulate, at this time (October 1979):

a. We have two frozen catalogs from the two original library collections. One, the old Weather Bureau catalog (1870-1971) has been recently filmed and reproduced in book form by G. K. Hall. The book form allows us to dispose of the card form while deciding if and when a retrospective conversion of the data to machine readable form is monetarily feasible or desirable. The same approach is planned for the Coast & Geodetic Survey catalog.

b. We have a 3rd card catalog which represents our acquisitions since September 1971 which is also in machine readable form and accessible via OCLC. The portion from April 1972 through December 1975 is also in the form of a book catalog which constitutes a "first" in that it merged data from two separate and somewhat different data bases.

c. We are currently starting to produce a COM catalog using data from the OCLC tapes and the experience gained from producing the book catalog.



The entire catalog creation process is identical for both a COM and a printed book catalog. A system accepts as input a file of unit bibliographic records, explodes the requisite number of entries from each unit record, sequences the individual entries, formats the sequenced entries into pages, takes due account of the physical extension of a display page and directs the output to an appropriate display device (a line printer, or a magnetic tape for COM output). The differences, if any, between catalogs produced in various physical forms are not the consequence of technical considerations. They are the result of economic factors. The low cost of microform as compared to paper allows one to increase the number of access points, eliminate the need for supplements, allow for frequent and complete updates, and allow for wider distribution. Our contract is with Blackwell North American (BNA) through the Federal Library Committee (FLC). This contract is available to any Federal library through FLC. OCLC is being used as the bibliographic utility to produce our magnetic tapes for BNA. The COM catalog is to be updated on a monthly basis and will include the holdings of NOAA's five local area Centers and five of our field libraries. The COM catalog will be available to all of NOAA's 33 field libraries although initially their holdings will not be included. NOAA headquarters library will use microfilm on ROM III Readers.

Two vendors have developed readers that are specifically designed to serve as library COM catalogs--Autographics, Inc. and the one NOAA will use, the ROM III, developed by Information Design. Both use roll film on large capacity reels which are permanently installed in the reader. Both provide alphabetic index pointer synchronized with the passage of the film through the reader. The manufacturers claim that 1,000 foot reels of ultra-thin film will accommodate a 250,000 title catalog.

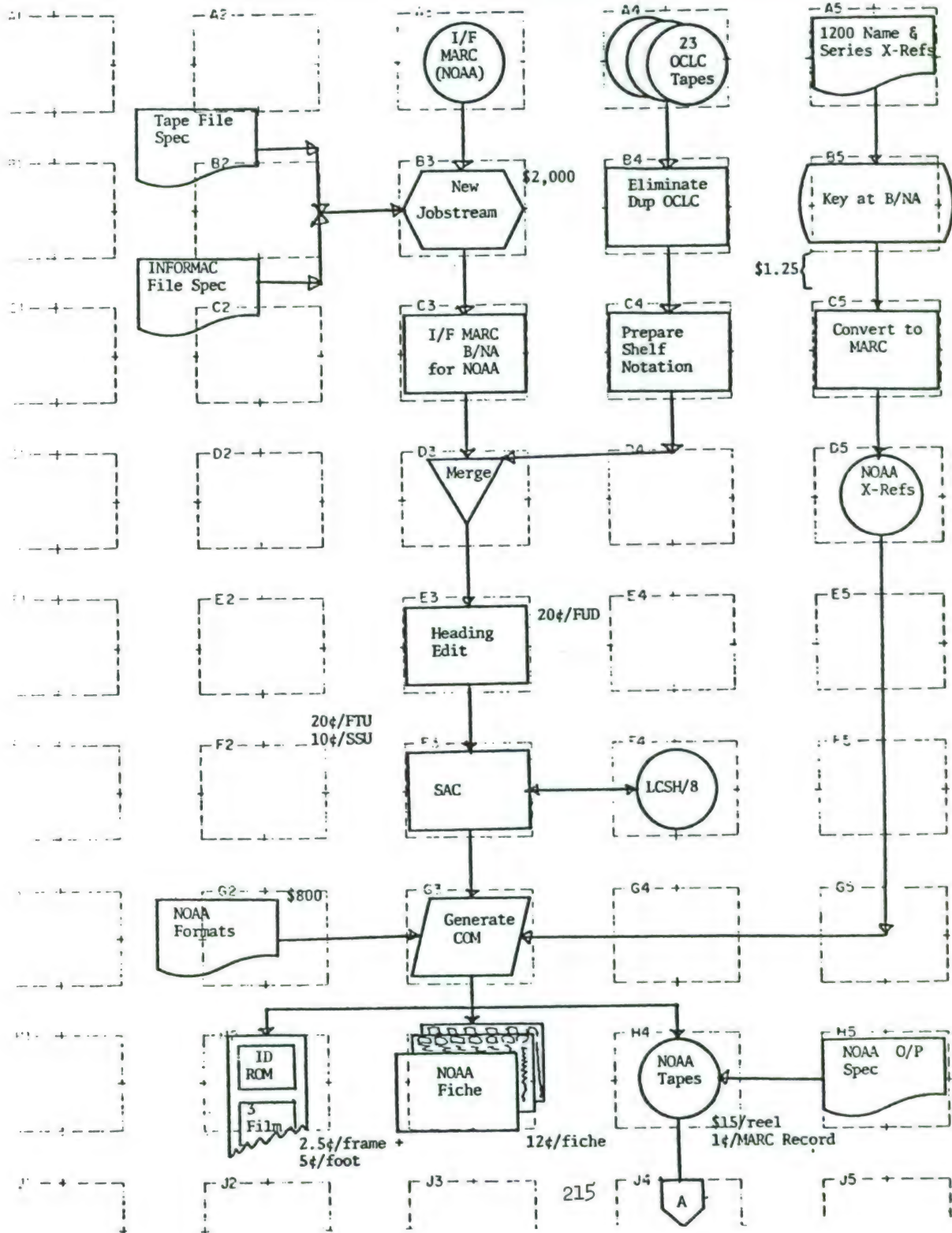
The COM catalog is a promising display medium for an automated catalog; it is one that is produced in microform by direct computer output. An important feature that will be included in the NOAA COM catalog is cross referencing for both name/series and subjects. This was not a feature of the book catalog. Other products to be generated from the OCLC tapes as part of the COM contract is a KWIC/KWOC list, and an improved library accessions list. The library is currently using the OCLC accession's list which does not display sufficient bibliographic data for our purposes.

As a part of the NOAA Library and Information Services Division Feasibility Study for an Automated Library Information System (ALIS), studies have been completed on the future of NOAA's catalog--the next step is an on-line computerized catalog, at which time all card catalogs will be eliminated.

A list of related articles is appended for anyone planning to develop a COM catalog. Exhibit A is the BNA workflow for producing a NOAA COM catalog.

## IBM Flowcharting Worksheet

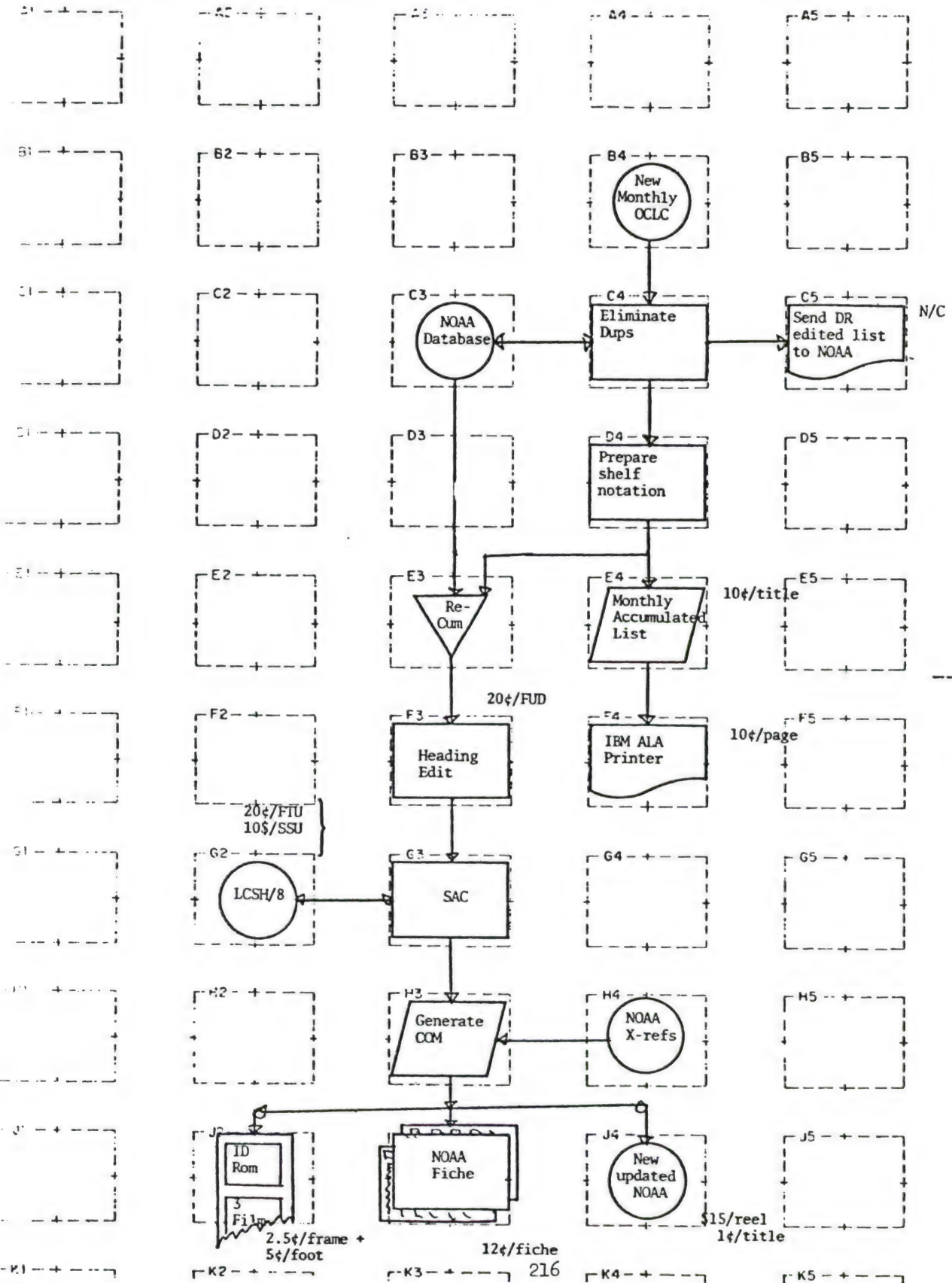
Programmer: NOAA/FEDLINK Program No.: START UP CYCLE Date: 1979 Page: 1/2  
Chart ID: \_\_\_\_\_ Chart Name: \_\_\_\_\_ Program Name: \_\_\_\_\_



Fold to here.

Fold under at dotted line.





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CLOSING THE CATALOG AT THE WRIGHT-PATTERSON TECHNICAL LIBRARY  
COST CONSIDERATIONS

Peter Lucuk  
AFWAL Library  
Wright-Patterson AFB, Ohio

During this presentation I will discuss the methodology and cost factors we used in planning for our automated system. We have received approval for the system and it is now in the early stages of procurement. We hope to receive the hardware in the spring of 1980. An on-line catalog is the center piece of the proposed system and its cost will be discussed in relationship with the total system.

The Technical Library is in the final stages of a consolidation from several smaller service units. The library provides service to the Air Force Avionics Laboratory, Flight Dynamics Laboratory, Jet Propulsion Laboratory, Materials Laboratory, Aerospace Medical Laboratory and Aeronautical System Division. Present automated systems at the library include Lockheed Dialog, Medlars, OCLC and a local on-line report system.

In late fall of 1978 a review library services was conducted to determine which functions could be automated to provide better services to the scientific and engineering community at Wright-Patterson AFB. Several areas were pinpointed for possible automation; they were circulation, acquisitions and the catalog.

The library has over 50,000 books and 350,000 cards representing those books in the card catalog. We are presently going through a reclassification project and 25% of the classification has been changed from Dewey to LC. The reclassification is being done by contractor. All books that have been reclassified were done through OCLC and are available in machine readable format on magnetic tape. All new books are processed on the OCLC and those records are also available on tape. It was a logical conclusion that the machine readable data base that we had to create would be taken from the OCLC tapes. The library would not have to be concerned with strategies for the creation of the data base, and a full bibliographic record was available for the catalog if desired.

The usual cost for conversion of a record to machine readable format depends on several factors. Many commercial vendors have built up large data base files that can be matched against library collections with expected hit rates of 40%-90%. The hit rate would depend on the type and nature of the library collection. Size of the record to be entered into the data base also affects cost. Records can range from 200 to 800 characters. Records that are not in resource data bases have to be entered manually. When computer costs and editing are added to the total each title can cost from \$3 to \$7.

It was decided that a full bibliographic record for our machine readable data base was necessary and we were being provided that through OCLC catalog. We were then faced with the problem of deciding how we would present the catalog, Computerized photocomposition, computer output microfiche or an on-line computer catalog. Initial reviews of the commercial market showed that it would cost \$50,000 to \$60,000 per printing to have a book catalog printed and \$7,000 to \$10,000 per printing for COM. Both of the alternatives would be created from Library OCLC



tapes. At the time only 20% of the collection was on OCLC tapes and the reclassification was projected to take 3 years longer. These two alternatives did nothing to speed up the reclassification project which was costing \$80,000 per year and a full catalog could not be created until the reclassification was finished.

A review of the on-line catalog at first seemed expensive. The library would have to obtain hardware and software support locally or from commercial vendors. Locally there are fine computer facilities available at WPAFB. However, to have the software developed locally would have taken several years and could have cost well over \$200,000. Several commercial vendors were contacted to see what they had to offer. At least two vendors had systems that could satisfy our needs of full MARC Record acceptance, search by common Keys, and a subject search capability. Boolean logic and authority control was under development by both vendors. The cost of a basic system to put the catalog on-line would be between \$190,000 and \$230,000 and would include a minicomputer with peripherals and a software package. The system still seemed expensive until circulation and acquisition functions that could be done on the same system were taken into consideration.

Although, in short run (4 years) a book catalog or COM would have cost less, an on-line system--a commercial on-line system--was chosen over other alternatives for the following reasons:

1. A total system consisting of an on-line catalog, circulation and acquisitions will solve all of our automation needs for now and the future. Increased service can be performed without increased manpower.
2. Reclassification will be speeded up because no more cards will be filed into the card catalog. Records will be entered into the on-line data base cutting reclassification time in half.
3. The cost of the system (\$190,000 to \$230,000) will pay itself back in 4 years and thereafter provide efficient and effective services at a lower cost.
4. The on-line catalog will enable the library to project itself beyond its present physical location with a completely up-to-date catalog.
5. Future hardware costs are going down while software and manpower will continue to go up. Postponing the conversion was not an alternative.
6. Automation will project the library as a forward thinking organization to its patrons, enable the library to better accomplish its mission, and increase library use and support.

LIBRARIES - TRENDS AND DIRECTIONS  
OR  
THE CATALOG CONNECTION

Thomas D. Harnish  
Research Department  
OCLC, Inc.

Converging forces are shaping a new environment for libraries and as a consequence the present is full of opportunity. While the technical services aspects of library operation are undergoing sometimes painful changes, the long term effect on library patrons will be good.

At OCLC, we're working enthusiastically to develop and evaluate new technologies that can make libraries competitive partners in the "information age." Even though library staff are faced with issues such as AACR II and the Library of Congress closing its catalog we all have the opportunity to participate in, and lead, exciting developments between now and 1990.

Within this new environment, one scenario--a scenario which suggests a framework for the information industry in the 1980's--calls for establishment of libraries as the information source of choice by 1990.

In this environment the library will continue to promote the availability of library resources to patrons, increase efforts to furnish patrons and library staff with information where and when they want it, and escalate activities that will enable patrons to receive personalized service. Information retrieval processes and methods we have known will give way to approaches based more on computers and telecommunications. Individualized services for all levels of an organization will be an economic reality. (Incidentally, that doesn't mean all information for all levels, but selective dissemination at its best.) The line of demarcation from the computer information system and the library information service will be the terminal. I never have understood why Management Information Systems aren't a library function.

Financial concerns, technology, social forces, and the American public appear to be driving libraries toward the structural scenario just outlined. Whether this scenario will result from external pressures or internal plans remains to be seen. We feel strongly that libraries should actively participate in planning for their own future. In any case, we need a clear goal or we are going to head toward 1990 with only E Pluribus Unum to guide us.

The OCLC Home Delivery of Library Services Research Program has been underway for over a year now evaluating the technologies available for home delivery, identifying promising services that use those technologies, and analyzing the market factors related to such services. Market analysis suggests we are experiencing Harvard sociologist Daniel Bell's information revolution. He contends that the communications infrastructure is surpassing transportation and energy infrastructures in relative importance and therefore will be the central infrastructure tying our society together by 1990. He foresees increased personal interaction and a drastic reduction in the cost of distance which he suggests will speed development of a post-industrial society, where there is a shift from production of goods to selling of services.



Our research and experience suggest Bell's views are valid. As we plan for the 1980's we should look not just at serving a homogeneous need of a broad community of patrons but also at the emerging needs of a multifaceted society. We have to realize that we are really in the information business and then we will have to develop a better understanding of the capabilities of transferring information, whether by voice, data or video. All of us are aware of the time limits of information transfer our patrons have today. By 1990 the very existence of a military organization, government office, or commercial enterprise may hinge on its telecommunications capability. As we look at patron needs we must consider not only the type of interaction, the speed at which it must take place, and the volume of information to be transferred, but also at the priority of information transferred relative to the price of providing the service. Telecommunications has the promise of providing faster and more cost-efficient communications than present forms of written communication. That is not to say written communications will disappear. But, broadband services coming into use will provide delivery systems that enhance library productivity and significantly reduce the cost and time required for our patrons to obtain the information they need or want. You may be surprised that I agree with the recent Library Journal editorial which states in part:

"Along with this optimism, however, comes a nagging fear that the success of OCLC and the on-line databanks and the still burgeoning marvels of telecommunications may signal the end of a great deal of the library future. Without any substantial change, the library as we know it can quickly join the fraternity of buggy whip manufacturers presiding over a shrinking responsibility while electronics and commercial firms take over an even greater share of the provision of information of the nation."

The editorial is correct; change will be required, but we needn't fear. For example, mission-oriented research conducted by OCLC is targeted at change, at providing innovative new services and systems for libraries which will allow you as librarians to compete directly and successfully with commercial information providers. Notice that I said "allow"; it will be the libraries' decision whether (with?) goes their future. Let's hope, unlike buggy whip manufacturers, or railroads (that insisted they were in the railroad business and wouldn't accept that they were in the transportation business--and you can see where that got them) we recognize that we're in the information business...and act on that fact.

I mentioned we must look beyond the homogeneous information needs of a broad community of patrons. This is especially critical as we address needs of military library patrons. Communications and information needs of military library patrons vary by service and by function within a service. They can be segmented further by the size of the organization and by management style, although a few generic activities may transcend service and function. We in the information business (libraries) must understand the different information needs of a wide variety of specialists. At OCLC we have applied that kind of approach to our research efforts with better than 40 different research activities that investigate a wide range of delivery mechanisms and services. While some might say that technology is ahead of demand today, market demands will drive the implementation and refinement of technology. And there will be enough different information and communication needs to support the imaginative use of existing technology.



The use of broadband services is one example of innovative use of an existing technology. The technology is available to any user with the volume to make broadband services a viable economic alternative. That is why OCLC is excited about the possibility of offering such services to its numerous member libraries. This market will grow significantly--A.D. Little Inc. estimates that in a dozen years, eight million American homes will be able to obtain extensive, automated information services over telephone or cable, while many others could be receiving personalized information over the broadcast airwaves. Dramatic new services will combine television, computer, telephone techniques and technologies into home information centers. These services could be provided by military, business, or public libraries to offices and homes.

While we're looking at patron needs for the 1980's we must consider as the tools of our trade the technology that will permit us to meet these patron needs. Today's technology is really driven by software rather than hardware. In our micro-electronic world we're seeing a virtually limitless capacity to pack more memory and logic into a smaller space. The phenomena of digital calculators and digital wrist-watches document this well. Creative software promises to open new worlds of microprocessors and minicomputers.

There are innovative new uses of satellite technology such as SBS and Xerox's XTEN. One area which has not even begun to realize its potential is facsimile, with its recent manifestation in electronic mail.

Beyond facsimile are the electronic systems which will become part of the office of the future and a part of future telecommunications networks. Accommodation of market needs and the untapped potential of today's technology make telecommunications at least one of the most important considerations in the future of libraries. It is no secret that a lot of people are trying to figure out how to get into the market which has a growth rate considerably greater than the national economy as a whole and promises to accelerate in the next decade. It is interesting to note, in this light, that the OCLC leased dedicated-line network which connects our roughly twenty-five hundred customers in 50 states, Puerto Rico, and the District of Columbia is one of the largest of its kind regardless of the industry. And there are a number of factors present which will make the telecommunications industry, and OCLC's telecommunications efforts, leading growth opportunities for libraries in the 1980's.

The post-industrial state Bell described is happening. And it's happening now. Certainly not to be ignored as we look to 1990 is telecommunications' energy-saving potential. Some travel can be eliminated and other minimized by communications techniques available today. OCLC's Home Book Club experiment with QUBE, the interactive cable television system in Columbus, is a good example. Participants in a book discussion, involved from their homes, ask questions by phone, direct the discussion by "touching-in" on their consoles, and vote on the next book to be read. Once a book is chosen, participants--from their homes--can electronically order up to five copies of the book, which is mailed to them by the Public Library of Columbus and Franklin County. With as many as a thousand people reached in one program, a lot of energy is saved--natural and human. And when we're concerned with reducing the rate of rise of library system costs, the cost to the human component is also very important. As energy costs continue to escalate, the cost of more sophisticated telecommunications techniques will become financially more attractive.



Right now, the OCLC Research Department has several major projects underway in addition to the QUBE experiment. We are testing an innovative telecommunications system that allows us to send messages instantly to libraries and Network offices across the country for less than the price of a stamp...or at least that's one of the price/performance factors we're evaluating. Digital Broadcast Corporation's INFOCAST system uses the FM-subcarrier of radio stations to broadcast data to receivers that produce hardcopy messages. The message is entered using a convenient text-editing terminal in Columbus and sent via TELENET to a computer in Washington which determines the destination of the message and routes it to the appropriate radio station in the appropriate city. At electronic speeds, by the time we finish sending the message from Columbus, it is being received in Atlanta, Dallas, and Washington. The application of this technology to Selective Dissemination of Information, transmission of newsletters, and "narrowcast" information delivery from libraries is promising.

Another project with exciting possibilities is Telecomputing Corporation of America's "information utility" called The Source. For just \$2.75 per hour users can access the UPI news service and perform keyword searches on huge amounts of news, weather, sports, business and financial text. The New York Times DataBank has pages and pages of abstracts of interest to consumers (library patrons). A vast array of other information services--from sophisticated accounting software to educational courses to electronic mail--also are available. Currently, OCLC is looking closely at the possibility of making this service available to member libraries and someday through the libraries to patrons.

Perhaps the most innovative research currently being undertaken by OCLC is the in-house development of a viewdata-like system that will allow libraries and patrons access to computerized services including an electronic encyclopedia, personal financial services and bill paying, public information of community interest, and on-line local catalogs. And there's the catalog connection. From their home, library patrons will be able to make a local phone call and have displayed on their unmodified television sets information for all the services mentioned. We will soon be experimenting with 200 homes in Columbus. If successful, OCLC libraries could offer similar services to their patrons. And I certainly include military libraries. Closed data bases of interest to "information communities" such as military organizations or divisions could be provided as easily as an encyclopedia, and, of course, the card catalog (or video catalog) also would be available. What goes into that catalog could be as limited as author, title, and imprint or as extensive as the complete OCLC bibliographic record. Remember, this is only at the experimental stage, and we're wrestling with the same issues as everyone else concerning what really should be in the video catalog, what should be the order, and so forth.

Finally, referring to my comments earlier about the need for a goal, what are the implications of Bell's information revolution or information society? Obviously, it's a growth industry. It is a massive industry growing at a very rapid rate, and I think it is going to grow even faster as we approach 1990. There are opportunities for libraries to grow with this trend and prosper both financially and in terms of the success distribution of traditional and innovative services. And if there is a common thread that is going to identify those libraries that are going to grow and prosper I would have to say that it will be flexibility--the nimbleness, as someone else said--of its management and its staff to adapt to a new environment.

Each of you as participants in this 23rd Annual Military Librarians Workshop are the ones that can either have an integral part in defining the future direction of libraries, or you can passively watch, with buggy whip in hand, patron needs out-strip your services. What is going to distinguish those leading libraries in the 1980's will be not only nimbleness and flexibility but another very critical element--foresight, dedication to patron needs, their commitment to develop their markets. As a goal then, I propose that you consider closing the card catalog not as an obstacle to be overcome, but as an opportunity to be taken and as a first step toward 1990.



### TASK GROUP 3

#### NEW PRODUCTS AND SERVICES IN THE 1990s

Discussion Leader: Abbott Martin, Army Corps of Engineers,  
Washington, D.C.

The whole range of paperless information systems will be considered by experts in the field, including data base technology, use of video services, telecommunications, computer developments, networking and resource sharing.

\* \* \* \* \*

#### Wednesday, 3 October

1050-1200 - Session 1

Paperless Information Systems - Fred Dyer, RADC

1330-1500 - Session 2 (joint session with Task Group 6)

\* Library Automation - Charles Goldstein, Lister Hill Center  
for Biomedical Communications, NLM

#### Thursday, 4 October

0920-1000 - Session 3

Future of Data Bases - Kenneth Hunter, GAO

1000-1045

Home Computer Systems - Peter Kendrick, Capitol Tele-  
computing Corporation

1045-1130

\* Government Views on Data Base Regulation - Kathleen Criner,  
National Telecommunications and Information Agency

1330-1430 - Session 4

Indexing Systems - Dr. Hans Wellisch, School of Information  
Science, University of Maryland

1430-1515

User Service Relationships - John Sherrod, Consultant

#### Friday, 5 October

0950-1200 - General Session

\* Task Group Summary - Abbott Martin

\*Paper not available at time of publication.

## THE EXTENDED AUTOMATED LIBRARY

Fred S. Dyer  
Rome Air Development Center  
Griffiss AFB, NY

Reprinted with permission of DATAMATION magazine, Copyright by Technical Publishing Company, a Division of Dun-Donnelley Publishing Corporation, a Dun & Bradstreet Company, 1978--all rights reserved.

Need for Automation - There is a problem caused by the well known information explosion and the economic factors bearing upon scientific communication.

Growth of the number of scientific journals alone can be shown as an exponential rate from 1670 as projected through the year 2000. The doubling time occurs in about 30 years and it is anticipated that by the year 2000 there will be 100,000 journals in the world. In addition, the number of pages printed per year per journal is increasing.<sup>1</sup>

Management is well aware of the potentials of such information sources and rightly insists on searching of all pertinent data bases to avoid reinvention of the wheel. Faced with the need to do creditable searches of such formidable information bases has resulted in the development of a number of automated services such as the Technical Information Facility of NASA and the European Space Agency counterpart, "ESRIN."

Other automated services are those such as the Ohio College Library Center on-line cataloging and searches for literature, the Defense Documentation Center (DDC) searches of DoD restricted dissemination and classified unpublished literature, Lockheed "DIALOG," and, System Development Corporation's "ORBIT."

Most of these search tools are at least "household words" in modern day library operation if they are not a routine part of the working library process. Libraries have evolved tremendously in the last 10-15 years in this respect and have introduced automated search services, infused information specialists capable of operating these sophisticated systems and broadened the results of the library reference service and retrieval of pertinent information. Yet, from the user viewpoint it represents a cumbersome, nebulous system. Further with ever expanding and visible sources of bibliographic information, the problem can only get worse. Something more needs to be done.

About now, I'm sure you're asking yourselves, why is he busily acknowledging things about the library operation that are for the most part well entrenched and a part of library routine? The why is, the wheels of evolution are again catching up with the process, and within the next 5-10 years, new trends in automation will impact heavily on library activities.

The trends are the result of a relatively new field called "office automation." Office automation is the result of a convergence of word



processing and data processing fields, which is in turn supported by modern communication networks and a whole host of new technologies.

Accelerating the pace toward the convergence of data and word processing are such technological factors as distributed processing, the sharp drop in microprocessor and memory costs, gains in communications and microform technology, ink jet printing, and, perhaps the most critical of all, advances in software support for distributed and decentralized text manipulation systems.<sup>2</sup>

Over the years, automated assistance has been introduced to almost every group with the exception of the white collar workers. For example, industry and farming have been heavily automated with the result of increased worker productivity, and yet, the scientist/engineer as recently as ten years ago still relied upon basics such as the timeless slide rule and the manual library search and retrieval. Today has seen the arrival of the pocket calculator and the library performed on-line search, but there is still a lot to be desired. Most white collar worker automation has concentrated on the secretarial support. This is in the form of word processor introduction, which unfortunately only addresses the tip of the iceberg.

Word processing was first called "textverarbeitung." The term was coined in Germany to express the ability of IBM MT/ST's to type 150 words per minute. This not so astonishing speed of 15 characters per second, while an improvement over automatic typewriters of the time, had no editing capability. What has since developed is a variety of equipments ranging from basic power typewriters with built-in memories for on the spot revisions to highly sophisticated equipments with CRT screens and editing capability with external memory.<sup>3</sup> It is this automation technology that is most used to support the office of today.

### Office of Today

Consider the office information system as it operates today. The author of a message (a memo, report, letter, or contract) drafts it with his secretary, revises the draft, corrects the revision, and reviews the correction. Sufficient copies are made and then each is addressed and sent to the mail room, where it is transmitted to the appropriate destination via internal mail, Telex, or the postal service. The receiving mail room sorts and distributes to the addressee's secretary, who sorts again, screening messages according to her sense of their significance, and then supplements the message with file material that may be appropriate.

Communications within a building can take a day; going through the postal system takes two days under the best of circumstances - and nearly all messages follow this route regardless of their nature. An angry blast from the boss will take as long to make the tour as the quarterly inventory listing from data processing.

The introduction of mechanical word processing was expected to eliminate a good deal of the retyping that goes on during the drafting process. The ability to store text on a removable medium (card, cassette, cartridge, or floppy disc) seemed to be a natural answer

to the problem of retyping the document, but so far the equipment has not resulted in the revolution expected.<sup>4</sup> The problem is portrayed by the following figure.

Managers and Administrators	\$354 billion	Talk face to face Talk on telephone	\$22 billion
\$99 billion		Clerical	
U.S. Professional White and Collar Technical Wages 1974	\$150 billion	Photocopy and carry messages  Coffee, etc. Filing  Wait for work Mail Dictation Miscellaneous  Typing	Time Allocation Secretaries          2% or \$7 billion
Other Clerical	\$83 billion	Assume 100% of day is charged to typing	
Secretaries and Typists			

Figure 1

The chart above depicts on the left the annual dollars in 1974 for salaries in the categories: Managers & Administrators, Professional & Technical People, Other Clerical and at the bottom, Secretaries & Typists. Essentially these are white-collar workers in the U.S. If you look over on the right side of the chart, you'll see that the function of the secretary has been broken down into time slots which are then equated in dollar amounts. This demonstrates the point that savings in the typing area through the implementation of word processing represent relatively minor savings for the organization. They are not going to have a major impact on the organization in the classical cost displacement application. The chart shows that the secretary and the typist portion of the white collar worker group represents basically about six percent of the total in terms of dollars. The next category up includes the other clerical people. The bottom two categories on the left represent 45 percent of the workers with only 30 percent of the total dollars. As we go to the right hand side and analyze the job function of the secretary, it is assumed down at the bottom that the typist does typing 100 percent of her time; that's obviously maximum. The next group up is the portion of time that a secretary spends on typing. If you add those two together, you find



only two percent, or seven billion dollars of the total dollars spent in the U.S. In this case, 1974 represents only about seven billion out of a three hundred and fifty four billion dollar cost to our economy. The point is that there is not a very large amount of money to be saved even if you are able to automate all of it. You're only attacking 2 percent of the problem.<sup>5</sup>

Word processing by itself will probably not impact too heavily on the library. I am sure some of you have already introduced such devices only to find it's basically just another echelon of power typing. It may save drafting and redrafting of material but the output still remains hard copy and lacks ability to communicate electronically to the recipient. Of recent, is the push to introduce communications to word processing but options are still very limited.

### Office of Tomorrow

Parallel to word processor development is another concept which furthers the automated office concept of today. This is the development of on-line interactive systems which become an extension of the individual by providing the person with a terminal, today usually a CRT display device, giving access to a variety of "tools." Tools usually include a sophisticated text processor through which the user can create, manipulate, format, and file; a calculator; electronic mail; on-line communications; communications network access and other services. This concept opens the door to the office of tomorrow.

The Office of Tomorrow technology will be based upon a massive extension of existing data processing networks. With an office systems terminal placed on everyone's desk - executive and secretary alike - office correspondence, management information, public and commercial data base information will all be handled within a single data and communications network through those terminals.

New technologies such as low cost, flat video display terminals that weigh less than two pounds and fit in a briefcase will facilitate this chain of development. This "office in the briefcase" will make one's files and information management resources available wherever there is a telephone. Massive stakes are involved, for the national economy; for large companies; for office equipment manufacturers and, ultimately, for those who do white-collar or office work.

The change process is underway now propelled by social, economical and technical driving forces. What is uncertain is the nature and timing of the transition, exactly what technology will be available at what cost and when.<sup>6</sup>

Early work in this respect was accomplished at Stanford Research Institute in Menlo Park, California, in support of ARPA under a RADC contract. The concept was the Augmented Knowledge Worker developed by Doug Engelbart.

In the early 60s, Doug Engelbart, an electrical engineer who had been involved with advanced digital computer component design, began to think about the eventual impact of the video terminal on everyday



life. Engelbart's thinking went beyond the idea of having terminals available to everyone. He saw the use of the CRT as a way to expand man's mind - the augmentation of the human intellect, as he called it.

Engelbart theorized that before the advent of writing, man's knowledge had been limited to that which he could experience directly or learn about from others verbally. Writing changed all of that, he said, by providing a new dimension to our learning experience. Engelbart felt that the widespread use of video terminals as writing tools would provide an analogous added dimension for the human mind.

Engelbart's system was first implemented for display use on a small minicomputer, and consisted of the computer (a CDC 3100), disc drive and a video terminal and keyboard with a couple of added features - the keyset (or chord, as some prefer to call it), and a "mouse" (a movable cursor control device). The system was christened NLS which stood for on-Line System. The original NLS had only one video terminal, it soon grew to include a number of video terminals and several typewriter terminals.

The concept behind the NLS system is that each terminal should function as a person's total work station. In other words, it is not simply an input and editing tool, it is a complete "knowledge workshop" which handles everything from initial note-taking through writing, editing, collaborating, revising, communicating, and finally, typesetting. It includes the ability to support graphics terminals for computer-aided design functions and for generating line art to be included in a document. It can function as a programming tool; it can be used as a calculator; it can access data bases and contact other systems; and finally, it can be used as an electronic mailbox.

Apart from its ability to facilitate the production of documents for broad distribution, the NLS system is designed to operate in a virtually paperless mode. Since all of the users on the system can communicate with each other via their terminals, they have little need for paper copies of most documents except for those that are to be shared with people who are not members of the NLS community.<sup>7</sup>

#### DoD Problem

DoD has found that in addition to antiquated manual work processes, there has been a decrease in the numbers of staff/administrative/clerical personnel available to support engineering tasks. The result is that professionals are involved in activities having very little to do with advancement of science and technology just so that they can get their jobs done in the face of expanding bureaucratic documentation needs. Such needs have to be accepted as the consequence of the management system since various levels of project reviews and approvals have to have data generated by someone to record project initiation, progress, and results. Much of this is in the form of repetitive updates of data which again falls upon the scientist/engineer to provide.

Recognizing the need and a possible approach to the solution of the dilemma, RADC was tasked by AFSC to pursue an automated laboratory



experiment to implement, measure and record what the effects of introduction of automation to the laboratory processes might be.

The LONEX (Laboratory Office Network Experiment) Program Office is the result of this need.

An early LONEX activity was a survey of RADC user needs with the objective of seeing which identified labor intensive tasks would lend themselves to automation. Three outstanding areas emerged. These were the contract preparation cycle, management of projects and access to data both administrative and scientific in support of efforts. A fourth significant area, viewgraph preparation, was identified through a survey conducted at the Electronic Systems Division (ESD). This survey was performed by "Project IMPACT" and related contractor support personnel. (Project IMPACT is a complementing automation effort in support of ESD System Program Office activity.)

After investigation in depth which included a review of available technology, it was decided to implement a computer based interactive on-line system throughout our Management, Staff and Mission Divisions and thereby "automate" the entire RADC complex. This includes an element that is located several hundred miles distant at Hanscom AFB, Massachusetts.

The entire system will be leased for the duration of the experiment, 27 months. The final product of the effort will be documentation of the system, a report of system effectiveness, and guidance to assist others in similar efforts. An independent contractor will perform a base line measurement of pre-LONEX manual activity, observe the installation of the system and make a final measurement of productivity change.

The experiment will use only state-of-the-art equipments. Some software will have to be developed to permit various system tools to operate together and to accommodate the LONEX tasks. The first 18 months will see introduction of approximately 200 "work stations" into the RADC working environment. The next 9 months will be a static period of operation and measurement. The work stations composed of display terminals and hard copy output devices will provide the user with text processing, a data base management system, a mail box, electronic mail, graphics, a calculator, and access to remote data bases via communication networks. All of this activity, including the remote data base access will be by use of a unique, virtual, English structured command language. This will permit the user to conduct a search of a data base such as DDC using commands similar to any other terminal operating commands. If there was a need to access the AF INOCEN at WPAFB, the user would use the same approach as with DDC. This is possible through introduction of a front end/back end concept utilizing the power of the computer to do the necessary language translation between systems.

Five major tasks are addressed by the experiment. These are:

The acquisition process from concept to contract, which will involve all of the required data base access, form generation,



subsequent form generation, statement of work preparation, building of the request for proposal, and resultant hard copy output. All suspenses, coordinations, routing and approvals of the procurement package will be accomplished on-line.

Acquisition management including form generation and update, various levels of review, formal electronic filing of material for project case file development and generation of output products required external to RADC.

All activities inherent in documenting travel, including request formulation, coordination and approvals, trip reports and voucher submission.

Remote data base access as described above.

Regulation libraries in the form of AF/AFSC/ESD and RADC regulations presented to the user in an integrated manner. This will reduce RADC holding points from over 100 to one master record and insure currency of the publications at the users location.

As a part of this activity will be the ability to ship files, send messages, communicate directly, and for two or more users to view and operate on the same file simultaneously.

It must be apparent by now that the system will seriously impact the library operation. Sure, the traditional method of library operation will exist and continue to be useful but the question is, how will the library react to this new environment where the user can directly search and retrieve his own scientific and technical references? Some users may work completely external to the library, some may require help in devising appropriate search strategy and some may request direct library support. All of this could and will happen electronically. You must prepare to provide a satisfactory level of response as the evolution progresses.

So much for the current state-of-the-art. The next step in the process as mass memories, high speed communications, and devices such as laser printers develop is to automate the entire data base. This step is not that far away. It is almost within the realm of present possibility to use the electronic record exclusively. Technical reports for example, will become a routine in-house product of our electronic system. Since this means that the data is already digitized, what would prevent the information searcher and his electronic system from retrieving the entire document electronically. The user could first perform the bibliographic data base search as described herein and upon answering the question of "Do you want the base document?" or similar question have the entire record displayed for perusal or hard copy generated. An extension could be to have supporting references simultaneously retrieved! Other literature could be similarly handled. What is the role of the library in this situation? It is our place as information specialists and librarians to formulate the answer and prepare for this extended automated library environment. The future in this field is not far away.



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### Task Group 3

#### FUTURE OF DATA BASES

Kenneth Hunter

Today you're going to hear from a number of other speakers on aspects of the technology, so I will make some assumptions about its availability in the 1990s. The types of sources of information, I guess we'll be talking about, and expect to find readily available and usable for the 1990s, include most things that are already on the market, in one stage or another, or in fairly advanced stages of development. A few of us have access to or are participating in such experimental developments. In addition to what you are already dealing with, including all types of written material, and audio and video cassettes, I think we will have a wide array of disk and tape data files available. Certainly the 1990 census will probably be available on tape and disk, and people should be able to check it out of a library, as well as many, many statistical series or special technical data which is frequently used by many people. Similarly, I think it would be reasonable to expect that we will have hand-held computers with both statistical series and programs for using those statistical series built into the computer itself. Certain parts of the 1990 census and a number of programs from such statistical packages as SPSS should be built into a hand-held computer by that time. However, they'll probably be sufficiently high-priced that they'll still have to be used by more than one person. Few people would be able to buy them, but certainly students and researchers should have access to them and the library will be the place to go to borrow one. Similarly, researchers of various types expect to sit in some kind of research room and have access on-line to all the bibliographic services you're all familiar with, plus access to the full text of some information. From our standpoint, law is the one used constantly. I'm sure in other technical fields there are similar bodies of textual material that should be readily available. We should be able to get current information on on-going research projects, such as the data maintained by the Science Information Exchange of the Smithsonian.

Similarly, I would want to access data maintained by other researchers through something like the old ARPA network which connects many existing research communities in universities. I would like to engage in a type of conference with other researchers, to exchange some of the data and views that I have. These other researchers would be geographically disbursed. If they had a terminal and telephone, we could be in communication. I don't mean we'd communicate like you do on the telephone. We'd write messages to each other and they'd go in that other person's storage place, and when that person signs on, which may be after breakfast Sunday morning, he calls up his file and it says, "You got messages from these people. Do you want to read them now or do something else?" You might do something else, but



eventually you will read your message and reply. That technology is here. We've got 500 researchers that are on-line using a system like that right now.

There's some very basic legal, financial and statistical data about federal programs that most people in federal government and many citizens should access directly. We have a number of econometric models and services that are widely used and should be available. Much statistical data is geographic in nature, thus, some way of developing maps and displays should be available. Such a system exists in a research stage. I'll tell you more about that later.

I would also like to have available a text editing service. If I'm searching all these files and pulling stuff out, I need a place in the computer to put it and I want to be able to summarize it and be able to summarize it and produce a summary report.

Now, as I said already, everyone of these things is available, to some degree, in some form, today. Obviously, I don't know of any place right now where I could use all of these terminal devices and equipment simultaneously. That's my challenge for the next 10 years. I hope that by 1990 that I can carry out a research project with all of those services. If I did, what might it sound like?

Well, I posed a question. I assumed that I'm out there in 1990 and the problem (being in the legislative branch, I obviously focused on a problem from that perspective) is that the school feeding programs, school breakfast and lunch programs, are coming up for review and re-authorization in the 102nd Congress. That's 1991 and 1992, under the new Congressional Oversight Schedule which was set up back in 1980 when the Sunset Bill was passed (we hope). The school feeding programs were reviewed and re-authorized in 1982, but Congress was busy with economic issues at that time and didn't make any substantive changes in the legislation at that time. However, there have been significant changes in the 1980's in the size of the school population, in the geographic distribution, both nationally and locally, between urban and suburban migration, in food preparation services, and in basic ideas about child health and nutrition. Therefore, the Senate Food and Renewable Resources Committee, which was formerly the old Senate Agriculture and Forestry Committee, wants to do a very thorough reassessment of the needs and of the alternative approaches to school feeding. Now, you've been selected the senior staff person to handle this project for the Committee during the 102nd Congress. Your only experience is that you have a 16-year-old in high school, a 13-year-old in middle school and therefore know one side of the school feeding operation. You probably had a few other little problems like allergies, some dietary problems, maybe a little case of obesity from time to time. You remember that GAO report issued back in 1978 that said the real problem with the school lunch program was that it stuffed calories into kids, because in earlier decades they were skinny. Now the problem is obesity and the program is still stuffing calories into kids. If you've got one fat kid at home, you know this. You also have a good knowledge of the research tools available, but that's about the extent of it. Fortunately, the Committee has a research room with video terminals, color graphics, cameras, text printers and



a variety of audio equipment. Otherwise, you'd have to go down the street to the Library of Congress to find those facilities. You have 60 days to do the initial research and develop a staff paper suggesting Committee actions for the 102nd Congress. You need to examine current law, completed and ongoing research, identify key policy and technical issues and the key people along with their views. You also need socioeconomic data relevant to the target population, their graphic distribution and any trends in this distribution.

So, sitting in the room with all this lovely stuff, my first step would be to dial up my conferencing system and open up a notebook. It's computer-stored, and lets the software, that's me, create a place to put my thoughts. It's just like a notebook. I can store my references in there in the way that you'd put tabs on a notebook. I can store my thoughts in one place, my outstanding messages in another, and build a little bibliography.

The next thing I'd do is record in my notebook some keywords and subjects I use for searching and storing. In this case I would use food and nutrition, school lunch, school breakfast, obesity, etc., -a long list which I can later recall and thus avoid reentering my key terms. I'll just go in my notebook and get it. One of the first files I would go into would be the Federal Program File maintained by GAO, which identifies all federal programs, and has some legal, financial and program data about each program. It also identifies interrelated programs that are operated by other federal agencies, state and local governments and the private sector. That will give me one set of data. After reading and printing it, I would store it away. Then, I would do a similar search of the U.S. Codes, Statutes and Case Law, again doing some perusal of the information, printing and copying and storing away for references. Then, I would probably prepare for the Chairman's signature some letters to the Congressional Research Service, the GAO and the Department of Agriculture. I would enclose the listing of Federal programs and the law, and ask them to review it for currency and accuracy and to make any additions necessary, and then to reformat it into a reference document we can all use during the 102nd Congress. This reference document would minimize the contests over factual material once the real debate on issues has begun.

In the meantime, I'd begin some searching for research reports. I'd go into the file of recurring reports to the Congress. I'd go into the file of evaluation studies. I'd go into Congressional Research Service's bibliography and I would get into some of the special library files such as medicine, agriculture and education and I would go through the Science Information Exchange files of ongoing research. As I went through and perused, I would select some items and put them into two files, one by subject matter and one by source, such as researcher. As I went through both of these files, I would note issues raised, questions posed, and positions taken. I would then have a file on what each researcher was saying, and one on each subject. I would prepare some more letters for the Committee Chairman to send to some of the research organizations or individual researchers, asking them to update their work and their views or positions, since some of the work might be quite old, and we would want to know where they stand right now.



Again, I'd prepare even more letters for the Congressional Research Service, GAO, and Department of Agriculture and ask them to review my listings by subject matter and again, expand on them, annotate, update, reformat and put the material into another specialized reference document for the committee's use.

By this time, I would probably be in touch by telephone with some of the researchers myself, letting them know the letter was coming so they could get started. I would already have been in touch with the Congressional Research Service's senior specialist and the GAO team director for our subject area, because I know these people pretty well anyway.

The next step would be to go to some of the socioeconomic data. I would probably get into a file that describes some of the major federal information systems and sources, which would provide some description of the major systems and their content and accessibility. Again, I would narrow it down to sources that might be of particular interest to us. I would be in contact with or prepare more letters for the managers of those systems and tell them what we're going to do in the 102nd Congress and ask them to let us know how they think their data systems might be useful to us. Then I would play around with the econometric models a little bit to see if there's anything in there that might be usable, trying to see what kinds of questions I might ask to judge the size of the economic sector involved in the school feeding programs. I know I'm in trouble, because I'm working on an entity that is part of agriculture sector, managed by food processors and financed for the most part in education budgets. So I don't know quite what to do, but I want to find out what size the industry is.

I'd also experiment with some of the geographically-based data. I would try to do some correlating, maybe school age population by county with health statistics on obesity. Within 15 seconds I would have a picture with my variables displayed in multicolors. If I liked it, I'd take a picture with my camera or else go on to the next one. I would build a package of statistical data and analyses.

I'd probably prepare more letters for the Chairman to send to the Congressional Budget Office, GAO, and the Department of Agriculture requesting them to review this package of data and I'd raise some questions, saying, "Now, this is the latest data that's in the system. I know there have been changes. Will you update and make it as current as possible, verify the underlying statics to the extent needed for our purpose and then reformat the data and analyses into a nice statistical reference document for our use in the 102nd Congress."

At that point, I have done all the basic research that I can do in the first week; I've gotten all the letters out and I have people all over the government working for the committee, and I haven't left my room yet--I'm still there. Now, the next step would be to go back through, and, if you'll recall, I made notes to myself in my notebook about issues and begin looking for more. I get from Congressional Research Service their Issue Briefs and their current listing of all the bills pending before Congress and the current status of any that might

pertain to our project. The CRS Issue Brief would simply be another way of adding to the list that I'd already generated myself. The bills would give me something to reference to; for example, if we have an issue and the Senator from Tennessee has introduced a bill on that subject, then it's certainly very important that we talk to the Senator from Tennessee before we raise the issue formally.

This is an example of the type of internal homework we have to do at this stage. I'd probably do one other thing. I'd go into the conferences that are going on within the research community--these on-line conferences that are sponsored by the National Science Foundation. I'd find out which conferences are live at the present time and see if there are any that are related to this particular subject. Right now in 1979, there's a big conference on biomedical research. It might be worth dropping a message to the manager of that conference asking if they wish to contribute anything. In addition, I'd approach the research community with an open request for ideas and suggestions. This would generate new issues. Then I'd begin to combine all of the issues into a new list and I'd have the origin of each issue because I recorded them all as they came in.

Also, I would set up a special conference of people who would be directly involved during the 102nd Congress. They would be the key person at GAO, probably the team leader who is going to work on the legislation, the Senior Specialist at Congressional Research Service, some senior policy or legislative analysts at the Department of Agriculture, a similar economist at the Congressional Budget Office, and a few of those selected researchers that I had identified earlier, so that we would have a constant on-going communication during the whole process. By the way, the conference needn't be a closed one; we could open it to anyone who wants to tap into our conversations.

By now, I have enough information to lay out a 2-year agenda for oversight and legislative hearings including who ought to testify, the types of issues to be covered; I tentatively reserve dates on the legislative calendar, put together a summary and briefing package for the committee members and other staff, and then I would leave my research room for the first time with a small set of briefing material and go see what the world's like outside, secure in the knowledge that my specialized data bases are readily available and secure for continuing use during the 102nd Congress.



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Mr. Peter Kendrick  
Capitol Telecomputing Corporation



## THE SOURCE

Mr. Peter Kendrick  
Capitol Telecomputing Corporation  
McLean, VA

Whether attempting to make an airline reservation, reading a United Press International Wire Service story (and I'll go into more detail on that in a minute), sending electronic mail and various sundry other items that I'd like to show you, but nevertheless, with that in mind, we developed the information utility, and that's what we called it. It is a low cost, and for those of you with no computers, time-sharing system. A number of people can share a central computer that's located in Silver Spring. Now we're working with the OCLC at this point so that they can tie either into our system or us into their system so that we can tie in libraries around the country through the OCLC network, not only for communication between libraries using electronic mental idea of reprodomes, but in addition, trying to locate periodicals, say various other library functions at this point, exchanging information on new books, updates periodicals in addition to having OCLC's capabilities for the index card filing system -- that kind of development. We're in the final stages of negotiation with them at this point, and hope to see them a part of our system very soon. I will answer some other questions on that in a minute.

With that in mind, let's talk about what can the Source do in a library from a librarian's point of view. What use is it? As I said before, we're tied in with the United Press International Wire Service. Whatever they pump out over the UPI wires to all the newspapers in the country, comes through our system and is indexed immediately. You can access that information, again, virtually immediately. In effect, the news that you would read tomorrow, you can get today. In addition, instead of going through the Source-type approach, there may be dialogue with the New York Times Infobank users and its search system. Users call it key word search, and basically, that's what it is. You put in a key word and it will search every story under the category that you've requested, looking for that word. You can use some boolean logic like Carter and oil, underground and Shah, string it out that way and it will find only the intersection of all those stories. Those words would have to appear in every story in order for it to pull it back. We did that intentionally. We feel that's much easier than having you go through and say, "Now, I wonder what word they key-worded that under, what they indexed that particular story under?"

So, its a keyword search system. Throw a word in, it'll go and look at every story for that particular day and date, looking for that word and will pull back that story. At that point, you're given the full text of the story, if you desire, or the first paragraph of the story to get an idea of what it's all about. It does lead to some interesting searches. If you put in gas and star, it will look for gasoline, gasohol, gastronomic, anything that begins with gas. We have that capability also.



On the electronic mail idea, the ability to put a message into the system to anybody else that's on the system, send it to them and have them receive it virtually instantly. Obviously, if they're on-line, they would get it immediately. If not, it's stored in an electronic mailbox, so that when they sign on to the system it comes back and says "Mail Call" and the number of pieces of electronic mail waiting for them at that point. It tells who its from, the day it was sent, the subject, and gives you the full text of the message. In the same way as a regular piece of mail that you get, you can throw it away, you can give it to somebody else, or save it in a filing drawer. We have that capability with our electronic mail system. I can leave a message, I can hold it for somebody else, I can reply to it instantly, I can put return receipt requested, acknowledgment requested, various other options that you would find typical on any normal mail system.

Kathy mentioned the New York Times Call-Consumer Data Base. That is my no-stretch, the full New York Times Infobank. They charge \$110.00 an hour to use the service and we charge less than a nickel a minute. At that rate, they didn't feel they wanted to lose all the customers they currently had to Source. However, they had given us a subset of the New York Times Infobank, primarily consumer-oriented at this point, and again it is fashioned in a key word type of index. If I throw in a word, it'll go through and try to find that particular kind of word and pull back the appropriate stories. It will give you only an abstract with the appropriate citation -- where it came from, what day, that kind of thing.

Those are our two primary information data banks at this point. We are adding things like Media General stock market information, which is primarily financial information on about 43 other companies. That will be available about October 15. That will be 52 weeks of historical information. So, for the most part, if we're talking about strictly data bases, something from the point of view of looking for information, it's primarily the New York Times Infobank of the Consumer Data Bank, the United Press International Wire Service, and the Media General Stock Market Information.

We foresee adding an electronic encyclopedia that Kathy talked about that Prest Elterson has, but designing it around the idea of the key-wording system again, the way to throw a key word in and search for that particular key word. We haven't worked out the logistics of that particular area.

Let's talk about what the Source can do for a library network in general, and not just one particular library. In talking with a number of people within the Metropolitan Council of Governments, Library Association (I don't remember their names), they've indicated to me that libraries in general are trying to move away from the concept of being a warehouse for books, which they perhaps typically have been, and more into a center for community relations, community activities, etc. That is one reason that OCLC in particular is interested in the Source, to try to turn any library in the country into more of a community center, where people not only will come for



checking out books, but also for other information, something like our system would have to offer. Not everyone would have a computer terminal of their own at this point and it makes it a problem to use our system.

However, with the OCLC network, it can vastly expand the number of people that can access a system like the Source, at any given time. And that is primarily their idea at this point - to take it out of the realm of the warehouse for books and into the idea of a community center. We're working with such fun ideas as having all-electronic bingo, where people around the country at a library using terminals, will be playing bingo. Those are some of the more nonsensical or fun items behind the idea. The system also has the ability to chat - to chat interactively with another user on the system, whether they be next door or across the country. In effect, you can "talk" with someone in California for less than a nickel a minute in the evening.

Perhaps I should discuss cost -- it's always a minor detail though. We'll discuss it anyway. The cost of the Source is \$2.75 per connect hour, so no matter what you do, it's roughly a nickel a minute. That's from 6:00 p.m. in the evening to 8:00 a.m. in the morning, all day Saturday, Sunday and holidays. In the daytime, our costs go up dramatically to a quarter a minute, or about \$15.00 an hour. That is due primarily to our communications cost and we foresee that cost going down in the future, as we locate computers regionally throughout the country, the idea being to create a computer information network that anybody has access to through the phone lines.

Now that I have gone through a brief description of the Source, and probably told you 1/100th of what's available in there, I'd like to open up for a few questions if that's okay, because I'm kind of stuck. I can't show it to you, all I can do is talk about it.

Question: Access to this is through some type of dialogue mechanism, is that correct?

Answer: Yes.

Question: Will it accept communicating typewriters, for example?

Answer: Yes, IBM Selectric, something like that.

Question: Just a communicating typewriter?

Answer: It will accept most any personal computer, dumb terminal, intelligent terminal. We're even trying now with word processor systems, so somebody in California has a document they'd like to give to somebody else, you can send it through our system from the word processing machinery to that other person.

The idea behind our system is to try to be as transparent as possible. Maybe this is a dumb question. Obviously, I'm sure some of you have heard about the EIES system up in New Jersey. We're working with EIES at this point to try to tie their computer system into our computer system to get some transparency between two computers. We're hoping

to continue that with some other computer systems around the country.

Question: Will you explain what the EIES system is?

Mr. Kendrick: The EIES system is the Electronic Information Exchange System developed by the New Jersey Institute of Technology. The idea behind it is primarily academic at this point, but is information transfer through a central computer system very similar to ours, only theirs is being funded partially by an NSF grant and a few of the other areas. They also have what's called computerized conferencing. You would start a conference, let's say - put up some information. Someone could come in and respond to that information by putting up their comments. That could be 3:00 a.m. They wouldn't all have to be on at the same time. Someone comes on at 5:00 in the morning, reads that information and puts in his responses. The other person can come back later and add again to whatever response has been put in. Of course, this can be 3 people or 300 people. It gives you the ability to jump backwards in the conference to see what other people had said. The computer system will stop you. Let's say I signed off and I come back an hour later and I don't want to start reading from the top again, so instead, it will just bring me back to where I was, and I can start reading from there and see all the additional comments. It primarily functions as an electronic mail system, a computerized conferencing system, and I would say those are the two biggest areas at this point. I believe the idea behind it, and they do have a charter as to their purpose, is to ascertain the impact of this information technology in general on the public, or business, or whatever it happens to be.

It's not my system. I don't know that much about it, or how to use it yet. So, that's just a brief background on it.

Question: Could you address just briefly your arrangements with OCLC. Would you work through their network supervisor project?

Answer: Probably. It seems the most appropriate way to go at this point. We really had not worked out the details of how it would be done but rather just the idea behind it, probably through the network supervisor.

Question: You're talking now about the mainstream communications switch out of the OCLC dedicated network?

Answer: Yes.

Question: What would be the user interface or customer use of access to OCLC? What are they going to do with it?

Answer: If you're a library, I'm sure libraries communicate with each other at this point. Now the OCLC network will allow them to do it using the electronic mail system, number one. They have the option of sending a message to anyone else on that network virtually immediately, without the process of writing a letter, typing, mailing the letter having it go through the mail, etc.



Question: What about somebody who doesn't have OCLC? What are they going to do?

Answer: They can tie into our system by themselves.

Question: What are they going to do with OCLC though?

Answer: We haven't worked up with those libraries who are not members of OCLC network. This is just to give those current customers of OCLC the advantages of using the Source. Now there could be a possibility that at that point, if someone else does or doesn't want to join OCLC, that perhaps they will be given options to supervise.

Question: In the electronic mail mode, is there a charge for storage or is that built into the system?

Answer: There is a charge on both ends. Yes, both the sender and receiver have to pay a use charge. That would cost me a nickel a minute to send it, or to type it in, and a nickel a minute to read it.

Question: But, you don't have to pay for storage, say if someone leaves me a message then I don't have to pay for it?

Answer: Well, we will let it sit there for a reasonable amount of time, then send you a note that your mail's been sitting there for six months or something like that. And we know you've read it 300 times at this point, and we would like to try to free up some space and could you delete it? You can if you want to, then take it from the no-charge filing system in mail to the chargeables electronic filing system in our storage. Storage, I didn't mention, is \$1.00 a month for 2K bytes, which is about a page and a half's worth of information. That price should drop down to, hopefully, \$.30 or \$.50 per month in the very near future, for a page and half worth of information.

Question: I assume you have totally private files.

Answer: Yes.

Question: Would you be willing to accept mag tapes?

Answer: We'll accept mag tape, paper tape, diskettes, cards, I think that covers about everything you could possibly throw at us. We will take that and put in the system. Now, what you do with it from there will be that individual's responsibility. But we will load it in there for him. Then they can do what they want with it. It is a regular computer system, as you would expect of any time-sharing service, and as a result you can write in six different programming languages at this point, for those people that are inclined that way.

Question: This is done through an audio coupler, through the telephone?

Answer: Yes, an acoustic coupler.

Question: To the nearest telenet or cy net?

Answer: No, call letters. Now that should be a local call. I said 300 cities at this point, which doesn't blanket the country well. However, DTA buying TELENET will have vastly expanded that network within six months to, I believe, 160 additional cities. So very rapidly, we'll find our network expanding to those cities, also. What we cannot do anything about are those cities that do have user sensitive pricing as Kathy mentioned, whereas you can make a local phone call in Washington and I can stay on for one minute or one hour and it's a local phone call as far as they're concerned. In New York City, if I make a local phone call, I'm charged by the minute. They obviously don't have any control of the phone company yet, but we can't do anything about that. For the most part, it is a local phone call. Now if you're with procure Podunk, Iowa, I can't guarantee that it's a local phone call for you at this point. That is another distinct advantage of the OCLC network. They also vastly expand our communications networks into libraries that don't have a local mode, so to speak. It offers that advantage.

Question: Can you describe your retrieval language a bit? What other system does it resemble?

Answer: It does not resemble IDALOG, does not resemble New York Times Infobank, it doesn't resemble anybody's. We wrote the software to do it. It is a keyword. I throw in the word "Carter" and it looks for the word Carter in all the stories I want it to look at. I don't know of anybody that really operates on that basis now.

Question: In other words, it's strictly a key word approach? What about STAIRs?

Answer: I'm not familiar with that at all.

Question: It's a full-text keyword system?

Answer: It will leave out words like and, or, but, if, that kind of thing. But other than that, it's not keyword searchable on keywords input. It's keyword searchable on full text.

Question: There's no organized arrangement to indicate what words are in the system, is there? I mean, you can't review the terminology in the system to see if you can pick up some words that are relevant to your needs?

Panel Member: She's talking about a concordance.

Panel Member: Yes, a concordance is a sensible word.

Mr. Kendrick: Explain to me concordance.

Panel Member: A list of every word in the system.

Mr. Kendrick: United Press International, for example, pumps out



4,000 stories a day. I don't know how many words they end up with, but any word that you can think of is in there.

Panel Member: You don't need it in that free text system. Look, if the entire text of everything that you've lopped off that you want to look at, all news stories on the 4th of October, you'll get the full text of everyone of those, so it doesn't make any difference what term you put in, if that term is in there anyplace, it's going to kick out. If you get a zero find, the computer is telling you that term was not used on this day.

Panel Member: This points up a basic flaw in the system. You don't always use the same term as was in the story, even though the concept is in the story. The terminology in the English language is so extensive that to pick out the correct term is an exercise in detective work.

Mr. Kendrick: We thought it was much better than the Thesaurus idea.

Panel Member: I agree with you that it's better, provided that you present a referral list of the terms that are used.

Mr. Kendrick: I'd have to present the entire dictionary.

Panel Member: All it does is generally take the difficulty of input away, and fast versions of the output side. It controls the vocabulary, puts the difficulty on the input side and makes ease of retrieval much easier. But you can get an awful lot of garbage using a full text system. When you're looking for information, you get what you're looking for, but get a lot of other stuff you're not interested in.

Mr. Kendrick: You can limit it however, as much or as little as you would like. In addition to the fact you can scan the stories that it's retrieved, only the first paragraph, so you don't have to read the entire text to determine that's not what you wanted. If you want to just scan those stories to give you a quick idea of what they were all about. Then, if you said, "Maybe I should limit that search just a little bit more," I'll add another keyword at the end, or another one or another one.

Question: Can you use such things as adjacency, sentence logic, paragraph logic -- ?

Mr. Kendrick: Like White House?

Panel Member: Like adjacent house, or adjacent to the house.

Mr. Kendrick: Yes, this is the same as following right along together.

Panel Member: You can make them appear together?

Mr. Kendrick: Yes. You can use the typical boolean logic that you

would find in the DIALOG system for example, and, or, not. And wouldn't get you anywhere. Just as long as those two words appeared. And you could put in adjacent logic. So you are looking for the word White House as the White House and not a white house. Okay? White House is one source, input as adjacent terms.

Question: What does that do to your search interval response time when you get your data base loaded to 500,000 words or 5 million words, or whatever? Is it going to take substantially longer each time?

Mr. Kendrick: Is that 5 million words that you've put in?

Panel: No, that's after dealing for a few years with concepts or whatever, a larger file than what you have now, each time it has to search the whole file. What I mean is, is there any difference in delay as it grows exponentially in terms of response time?

Mr. Kendrick: I'd be foolish if I said no.

Panel Member: What is your current turnaround time - 5 seconds?

Mr. Kendrick: Generally, about 1 to 5 seconds. We're just installing some new computers at this point and our response time is slower in pulling them out of the network. But as we expand that capability, we'll get faster. On a particularly difficult search, it might take 5 to 10 seconds.

Question: How many searches can you accommodate at the same time?

Mr. Kendrick: Simultaneous users? We have about 1500 people on the system now. To use it simultaneously? It's hard to describe how we treat it as simultaneous, but we can have those 1000 people signed on.

Question: How many ports do you have in use at one time?

Answer: About 200, and by using what we call concentrating authority, we can get a lot more from each port.

Question: How many computers do you use?

Answer: Five.

Question: Do you use SNOWBALL at all?

Answer: No, we don't use SNOWBALL.

Question: What language do you use?

Answer: You can program on the system in BASIC, FORTRAN, COBOL, PLI, RPG and PASCAL. In addition, we have another data base natural language called INFO. It's a very nice language to use because you define what you want it to do. If you want to calculate payroll, you tell it to calculate payroll, or words to that effect. We're trying to get it to work without being programmed.



## GOVERNMENT VIEWS ON DATA BASE REGULATION

Kathleen Criner

### Task Group 3

There are a variety of different home information technologies now under development known by the generic term videotex, but it's not the technology that I want to discuss today. I don't think that's the most important aspect. What's important is this notion of delivering information services into the home; and, by services, I mean services like electronic mail, electronic banking, and tele-shopping, which are the more sophisticated kinds of services, but also very simple services like notices of meetings or school closings. I expect some example of library applications might include notices of the availability of services; or "New books at the Library." These systems might be an alternative way of disseminating information to the public.

I have some examples which I will show shortly of the kinds of services that are on the British system right now.

In fact, there's a big question about just how to define videotex systems and how to classify them. There's a question as to whether or not they should be viewed as a service, or whether they should be viewed as a technology. The early systems that were developed only had two versions. There was a broadcast version and a telephone version. We now have five different categories of systems, including something called hybrids into which we put everything, also we just don't know how to classify. Videotex systems were originally developed as a mass medium, i.e., a consumer service. We now are seeing them used in-house as a supplement to the office automation projects.

There is also a question as to whether or not they should be a mass medium. As an alternative, the technology could be used to deliver only specialized services, for instance, providing electronic banking into the home. About the only thing that we can say right now is that there does seem to be a consensus, particularly outside the U.S., that these systems are going to be implemented. I expect over the next ten years we will see substantial development of videotex systems in the U.S. I think that libraries will be affected by these systems; hence the library community should start thinking about what their role is going to be in developing and offering these services.

Let me begin by explaining the different kinds of videotex systems now in existence, and then I'll show you some slides so you'll get a better feel of how videotex actually works. I mentioned that there were five different classifications. The first type is a broadcast version called teletext, and, at the moment, it is the simplest version. Text information is inserted into an unused portion or an unseen portion of the television signal called the vertical blanking interval (VBI). If any of you are familiar with captioning for the deaf, you know that there is a mechanism now under development where

people who are deaf can see text that relates to the program without anybody else seeing it. They have to purchase a special adaptor for their television set to "decode" the signal. Sears and Roebuck will offer decoders on adapted sets for the deaf community starting in December.

Question: Excuse me, what was the first type?

Answer: The broadcast version.

Question: Would you spell that?

Answer: BROADCAST, i.e., it utilizes over-the-air broadcast signals to send text information to your home. You would receive information just as you receive television signals, but there's a portion of that signal that is not needed to transmit a video program into which you can insert text information. You can insert only about 200 pages of information in the VBI at this time.

To access information on a teletex systems you would have to have a very simple key pad device, which looks very much like a calculator, and has 12 or 16 keys. You key in the code or page number of the information you want to select. An online menu or printed index is provided to help you determine what information is available. For instance, to see the local bus schedules, you would press in the page number or code and that schedule will appear. This could be a ubiquitous system when you consider that everyone has a television set; it would be a relatively easy system to develop into a mass medium. The user equipment for a broadcast system could be very inexpensive when compared to some of the other systems I will talk about later. You might pay only \$50.00 for an adapted set, and less ten years from now.

Another type of broadcast system could be provided over a cable TV system. The difference between an over-the-air and a cable system is that you'd use a full video channel, rather than have the vertical blanking interval. You'd have a channel devoted to text information. There is a service something like that now. For example, you can look up the local consumer service which gives you information on comparison prices for a particular item. The difference in a teletext system as opposed to what is available now is that users can select the precise piece of information they want. For example, they can select only prices on fresh produce rather than watch all listed prices scroll by. They have the ability to put in a code that means just that particular piece of information will appear. And you can offer a lot more information on cable TV. Perhaps 50,000 pages of information could be provided on this type of system.

Another way of offering videotex is over a telephone based system which operates very much like the many computer terminal devices that you're familiar with. You have a television set in your home, that's your display device, which is interconnected with your telephone. You dial a control number, and the information appears on your television set. Telecomputing Corporation, which will discuss their system next, offers this type of home information system but they don't work



with television sets. Their system, called "The Source" is accessible by personal computers using CRT's for display devices.

Finally, there is a third category of videotex system that I call hybrids. One type of a hybrid system is a cable TV system used with the telephone network. You can use your telephone for dialing into a central computer and selecting information which is then broadcast back. Or another variation is the FM subcarriers, i.e., every radio station has what are called side band channels, channels which are not used for transmission. For example, Muzak is transmitted over a side band channel. You could transmit text over that side band. These systems may be a little more difficult to operate.

Finally, you can distribute all types of videotex information on a national basis using all the local transmission mechanisms I described. You could use the satellite systems to distribute these services nationally to local telephone companies, computer centers, or cable systems. For instance, Southern Satellite, which is interested in this kind of system, is connected up with 300 cable systems and they already have API and UPI news services on them. It would be a very simple matter for all those cable companies who get this service to market the decoders to select off videotex information. For instance, the local cable operation might sell or rent decoders, or rent new sets that have built-in units and then all of those cable subscribers would be able to pick up these kinds of services.

Now just so this doesn't seem too far out, these systems really are already operational around the country, and more will be operational before long. There are a number of experiments going on. However, before I discuss these activities, let me show you some slides of operational systems on the projector. Here are the kinds of systems that are based on technology you all use and are familiar with. Everyone is familiar with the television. This is the vertical blanking interval on a television which is the space in which information is inserted. This can be expanded out to a full page of information. If you use it as a captioning system, this is one of the things that might appear. Alternatively, you can use it as an emergency warning system or for news flashes. If you manipulate certain buttons, the latest news flashes will appear on your screen. Now, these slides are from the version that was developed in England. It's called the Ceefax Service and is offered by the British Broadcasting Corporation.

Question: How do you know what information is in the system?

Answer: When you first get into the system, if you don't know what information is on the system, you have an online index or you have a printed index which gives you location or page numbers. There's not a lot of information offered on the system right now. You'll notice this slide is marked page number 136 out of 200 pages. If you want additional information go to page 137 as indicated on the bottom.

Weather is a very popular kind of application.

Question: What else is asked for?

Answer: Market prices. The information that lends itself to this medium is information that's not readily available elsewhere. Market prices are available elsewhere but not with this kind of currency operating within this system.

One of the things I'd like to point out about the British system or any teletext system is who's going to pay for all this in the U.S. The way the British have implemented it, it operates much like a normal news service. Information is fed into a news station, they reformat it and broadcast it over the air and the BBC assumes the whole cost of operating the service. I'm not sure that would happen here in the U.S. Although, it might be offered this way by public television stations.

One of the things NTIA has been doing is talking to government agencies who might be information providers, i.e., people who have the responsibility to provide information to the public. We are exploring whether they would want to pay the cost of putting that information up on this system. If you want to compare it with other ways of getting information out, for instance, by mailing, this is a very favorable alternative. You may be talking about two thousand dollars to deliver several pages of information. Even if it is economical, some commercial broadcasters are concerned about whether people would be watching these types of programs instead of their program and advertisements.

As you look at these slides you have an idea of what the graphic capability looks like. It's pretty primitive. However, the Canadians have done quite a bit of work on graphics. In fact, the Canadian system evolved from a project to develop a way of developing graphic displays for military applications. This slide gives you an idea of what a key pad adapter looks like, again, it is very simple. In the future, I don't think this will be the case. You'll have the full alpha-numeric keyboard, the typewriter-type terminal, but it will be more costly and not only for the user, but it will also be more of a problem for the data base software, and it will take a while to develop a more sophisticated system for the mass market. These slides are from the British Prestel system, which is the telephone-based version of the British Post Office Data System. Again, you access the information in much the same way as with the Ceefax system. You have a printed guide or you have an on-line index and usually each service provided by each information provider has a specialized index. It's all organized into a very tree-structured system. It seems awfully cumbersome, especially to people who are used to using data base services, but not so cumbersome if you assume it will be used as a mass consumer service by people who have never used computer terminals or data base service before.

This slide is an example of an alphabetical index to locate the service you want to go to, but you're not sure of the page number. If it begins with A you'd press number 1, and then that page would come up. And if you're interested in an agency's publications you'd press 223 and that would come up. This is a sample of a very typical



search. One of the most interesting applications is tele-shopping, for example, book clubs. To use a tele-shopping service you might see a newspaper ad telling you to go to page 4099 on Prestel to get information about the Smith book club. Page 4099 will give you how this book club operates, and if you're interested in getting more information, you would look down at the bottom of the page for instructions on additional information. And if you press the key number indicated, it will give a page of information on the conditions for joining the book club and other information you'd be expected to know. And if you decide to join, you press the key number and it sends you a thank you note for joining. When you hit this button on your terminal adapter, your name then would automatically go forward to that company.

Comment: That would cut down people's sales resistance immediately.

Ms. Criner: Yes, that's the complaint consumer groups have with it.

Question: And what about when unauthorized persons or children and baby sitters fooling with it and place orders on the thing.

Ms. Criner: Most of them will eventually have a key override device somewhere to prevent unauthorized uses, or perhaps sales over the system will be subject to approval by a buyer's letter of confirmation.

There is a system that has received a lot of publicity here in the U.S. called the Quke Cable System. It is a 2-way cable system. Recently when President Carter made an address, his speech was broadcast over Quke and viewers responded to a questionnaire critiquing the speech. Questions have been raised concerning the validity of that sample, but the critical point is that with these systems you could get immediate feedback.

Question: Is the Prestel System provided by the government?

Ms. Criner: Yes, I should explain that. In all the European countries, the Postal Services, the telephone services, the telegraph services, are all national. They're all owned and operated by the government.

Question: Then the taxpayers are paying through their taxes for this service. So if they don't use it, then they're not getting their money's worth.

Ms. Criner: Well, people would argue you pay for everything you get here in the U.S. only by a different mechanism. But they have a different concept about what the government's role should be in providing communications services. They feel that communication is too important to trust to a private entity. One of the things that is acknowledged as an advantage of our approach is that we have a much better telephone system than many European countries. On the other hand, the Europeans are developing a lot of very innovative systems and services which are not offered here in the U.S. and videotex is an example of one of them.

Returning to the slides, horoscopes are very popular. One of the things we're discovering through Prestel and other such services, is that people like games, quizzes; in short, entertainment services, more than informational services. And the first inclination is to think that people aren't interested in educational services or something of that nature, but people currently perceive TV as an entertainment medium and that may change in time. I should also mention very briefly the cost, although the prices are going to change. You pay for everything in the system. You have to buy an adapted set, but that's not a big investment initially to the consumer because in Britain most people rent their sets and the adapter does not greatly increase the rental fee. However, all your telephone charges are being monitored, so every minute you're on the system increases your telephone charge, so that's a consideration. You pay for access to the indexing, as well as each page you access. In this right hand corner you can see the charges. There are problems with this pricing approach, e.g., if you conducted a search and paid for it and didn't find the information you wanted, or if the index was inaccurate, you'd really be unhappy. When you eventually have the alpha-numeric type-writer keyboard then you'd be able to send a written message.

Question: You don't receive any certain numbers of pages free?

Ms. Criner: No, you pay for everything.

Comment: It seems like a lot.

Question: Can everyone see whatever is broadcast, like if you call for arrival of a train or plane?

Ms. Criner: In a broadcast system many users can simultaneously view the same information, but no one know what you are viewing at a given time -- it is just like watching TV programs.

The British developed the first initial broadcast and telephone-based videotex systems. However, other countries have developed competitive systems and the technology has developed rapidly. But the British do have the advantage of being in the field, i.e., they have an operational system with about 2000 users. They expect to have many more users and services on the system by the end of the year. They have a number of services that work and their statistics are very encouraging. Most interestingly, one of the services that does not work is big encyclopedia data bases. An entire encyclopedia has been put on the system and it just doesn't seem like a lot of people want to spend the money or the time searching for that kind of information. Also, the graphics are a little bit garish. This slide illustrates classified ads like you would see in a newspaper.

As I mentioned, Prestel is not just a consumer service, it can be used as a business service, and this slide is an example of that application.

Comment: That's a terminal device isn't it?



Ms. Criner: Yes, Prestel can be used as an in-house MIS service, and this might be desirable, i.e., these terminals eventually should be low cost and easy to use. So if you are trying to get business executives to use it, Prestel may be desirable over some of the other information retrieval systems. That's the last of the slides and I seem to be running late, but let me give you a sense of what's going on overall.

As I indicated, the British have two systems that are being operated on a daily basis. The Ceefax, teletext system has 200 pages per channel and is being offered by the British Broadcasting Corporation. The British Post Office is offering the telephone-based service called Prestel. I think Prestel has about 1600 users split between business and homes.

In France they have a system called Antiope, which is considered by some to be superior to the British system. One of its chief advantages is that it will operate both with a broadcast system, a cable TV system, and a telephone service. I believe that eventually you would want to integrate these different systems. You might want to use a broadcast system for certain kinds of information, perhaps even as a reference service for more detailed information which would be accessible in a telephone or a cable service. But an interesting thing about France is that they have decided over the next ten years every household will have an Antiope decoder installed at the government's expense. They believe that it will be cheaper to put Antiope decoders in people's homes than it would be to print directories and to provide yellow page services over the next ten years. Part of the push for this technology is coming from the printing/publishing industry. All of the industries that have high distribution costs and where the mail does not appear to be the best way to get information out, have incentives to explore alternative delivery systems like videotex, which may be less expensive.

In Canada there is considerable activity in this area as well. They have a system called Telidon developed by the Department of Communications (DOC). They have one experiment due to start any day now, which will jointly be conducted by DOC and Bell Canada, with about a thousand terminals located throughout the Toronto area. Their system is really very impressive. It has all the transmission features of the Antiope system plus the graphics are a lot better, the resolution is better, and they've spent a lot of time looking at these systems and saying, "What can we do to make it more of a viable service." One opinion offered by a Bell Canada expert is that a lot of services offered by the British are what they call lollipops. It has been suggested that the most important services you can offer on videotex are transaction services like tele-shopping, and banking. This approach seems to be adopted by a number of U.S. companies too.

Briefly, there are trials going on or planned in West Germany, Sweden, Finland, the Netherlands and Australia. In most cases these countries have purchased one or all of the existing experimental systems for use in their tests. And, needless to say, there's a big push to establish international standards, particularly by France.



In the U.S., activities have lagged and are very fragmented. CBS has an experiment on KMOX in St. Louis that is a technical experiment.

There's an experiment also in Salt Lake City at KSL-TV. The CBS experiment is being monitored by the Electronic and Industry Association, and they plan to develop proposals for teletex standards which some people think will help resolve some of the uncertainties, thus encouraging manufacturers in this area. However, some manufacturers are not going to wait, and it may be some time before the Commission adopts standards. Also, the EIA is moving slowly and they may not have recommendations until the end of this year. There are two or three other projects I should mention. There is Green Thumb, which is a federally sponsored program which the Department of Agriculture's Agriculture Extension Service and the National Weather Service of the Department of Commerce have sponsored. They've given about \$400,000 to the University of Kentucky to conduct a telephone-based experiment to deliver crop and weather information to farmers. The University of Kentucky has a contract out with Motorola to produce these decoders which they will give to farmers, and they want operational in March. It's a very interesting and innovative project. However, the standards and systems they are using are quite primitive compared to any of the technology that we've just seen, and I hope that project will lead to a clearer definition of final needs, requirements, some sense of the utility of this kind of technology.

Green Thumb raises vital policy issues of what should be the government's role in providing information services.

There are three other private sector experiments --Knight-Ridden, which is a major newspaper chain, has an experiment in the Miami, Florida area. They are going to involve 200 households, but far fewer terminals, close to about 50. They've been very close-mouthed about what they're actually going to do, but I understand they'll have a list of information providers soon. They are working with AT&T. GT&E has signed an agreement with INSAC, which has a licensing authorization to offer the British Prestel software, but they've made no announcement yet concerning future plans. AT&T has an experiment called the Electronic Information Service which they are testing in New Jersey. It has been described initially as a system providing yellow page directory services but they've indicated services like tele-shopping and banking are potential future applications. It's clearly a consumer trial, to see how the technology works, and I think it's their first step into the home information market. As on NTIA we have co-sponsored a planning study with the Corporation for Public Broadcasting for a teletext test in Washington, D.C. The study resulted in a proposal by WETA here in Washington, in conjunction with Alternate Media Center, which is a research group that does communications research, to conduct the pilot project. The proposal has been submitted to NSF and HEW for funding. If this is funded, then a pilot will be conducted in 1981. NTIA will take (and for those of you in the Washington area if you're interested we could talk about it at some other time) responsibility for coordinating the federal role in that project. We will assist the Federal agencies who are going to be information providers in



the experiment; there are currently 5 or 6 government agencies who would like to participate in the experiment. Actually, it may turn out that we have more people wanting to participate than we can accommodate. But if you're interested, talk to me another time, or get in touch with me about it.

To sum up all of this; the technology is going to develop. It probably will not develop as rapidly as some of us think. It will take a long time for people to get accustomed to using this kind of system. But I think that as essential services become available on this system, people will have more of an incentive to use it. Clearly, there are numerous policy issues. Who's going to provide it? Who's going to control it? What about copyright, privacy, equity; are we going to create information gaps within our society? I'm not going to go in to all of these issues. These are things that NTIA will be looking at and we plan to take an active role in resolving some of these problems. For libraries, I think this is an opportunity. You could use it for in-house administration. You can improve administrative procedures, and if the costs do come down, it will be a desirable and an attractive system. Libraries could be information providers both from the perspective of providing actual "programming" e.g., continuing education, or general information, e.g., updates on local library activities. They might use it to access to other data bases. For example, I think that Telecomputing Corporation, which I have omitted discussing here because they are going to be talking next, has a portion of the New York Times data base on it and their rates are certainly very attractive, especially in off-peak hours. Finally, you could use it to deliver reference services to the public. For example, you could have a system where people could call in and say, "This is the kind of information I want" and leave that message and then the answer could be sent back electronically to them. Most importantly, I think there's a big role in public education, i.e., in teaching people how to use these kinds of systems, interpreting them for them. It's not going to be easy for many people to get accustomed to using these kinds of systems. There's a lot of research that needs to be done on how videotex would fit in with your existing services, whether or not it could be a supplementary service or whether it might actually supersede some existing services. I would urge you to at least monitor the new developments in this area, and, if possible, take an active role in learning to use some of these systems. Thank you.

## INDEXING SYSTEMS

Dr. Hans Wellisch

School of Information Science, University of Maryland

I would not wish to venture too much into what is going to happen in the 1990s or towards the year 2000, because it's such a hazardous thing to do. Even if we look at just anything about which predictions have been going on for several hundred years, at least, we find even quite knowledgeable people can be wrong when looking into the future, as perhaps demonstrated by something which I picked up a few days ago, when I thought about what I was going to say today, and I thought it might fit in. Edison said, in 1913, "Film will totally replace the book in the New York schools during this decade." There you are.

And, if we now look back to some of the predictions that have been made in the past by so-called futurologists sometime in the mid- or late sixties or early seventies, all are far off the mark because they didn't foresee the energy crunch and many other things that have happened. So I would not try to look too far into the future, but rather look at what it is we have now and what we can expect or what we have now that will remain with us for the next foreseeable years.

I would also wish to give you a glimpse of one of the more modern indexing systems, the PRECIS system, which is no longer a matter for the distant future because it exists already. It's working, but it is not very well-known in this country.

One of the questions that comes up very often when future information and retrieval is discussed, and indexing in particular, is, "Will computers do it all?" Will we have to rely, or will we be able to rely on the computer doing all or most of what indexers have been doing traditionally? And there will be any number of people who will say, "Yes, that's what we have to look forward to. The indexer," they say, "is an endangered species. The computer will do it." I'm not that optimistic about it. I will not discount the computer, as you will soon discover, but I am not yet prepared to believe that it will do it all, for one simple reason. If all recorded information were generated by computers for other computers, then that would be possible, because everything would be according to algorism and one computer would have no difficulty speaking to another computer. But we are not dealing with this kind of thing. What we are dealing with is a human being on one side who is the originator of an idea that he or she wants to transmit to other people, either directly in a room as I am speaking to you now (no intermediary needed) or transmitted to people in the far future. Over on that side, we have another human being. So we have human beings speaking to other human beings. We should never forget that. It's of course obvious; it's trivial, but we shouldn't forget that because of that human element it isn't quite conceivable that computers will be able to, or as some people say, even should be able to take over the task of making what person "A" has said intelligible and retrievable to a person on the other end, person "B."



Further, it can probably only speed the fruitful cooperation between human beings and machines, because machines can be so extremely helpful in augmenting our human facilities as mediators, as being in the middle between the person who originates an idea and the other person at the other end who needs that idea for his or her information. This is nothing new. We've had it for quite a long time. If one human being is talking to another as I am doing in this room now, there are normally no difficulties. You can hear me quite clearly. If I want to communicate with a person farther away, there may be noise in the channel, or quite simply, distance is too large for my voice to bear that far. But until a relatively short time ago, there was no other way other than writing a note and sending it away to a person at a distance. Now, we've had for a considerable time the telephone, that makes it possible to transmit the human voice over huge distances, even though the telephone does introduce another kind of noise. It is better than having to shout or to have to write because it's faster, and it covers a larger distance.

We have had for about the same time period, the typewriter, which also makes it faster to transmit in the form of writing my message to someone over there, and it even reduces noise. I'm not referring to the noiseless typewriter in this case. What I am referring to is, if that someone has an illegible handwriting, that is a kind of noise in that particular channel. It makes it difficult for you to make out what that message is, and that is what noise is all about. So, the typewriter is at the same time making it easier to do it faster and to do it with less transmission loss.

Taking a jump now to indexing, I do believe that the combination of human faculties and human knowledge of the world and human ability to recognize context coupled with the capabilities of the computer is what we already have in some kind of indexing and what we'll be more involved with as we enter the 1980s and into the 90s. This will probably be different for different areas. If we take a scale, where we have at one end the Humanities moving over into Social Sciences and then at the far end, Science and Technology, there are increasing possibilities for the computer to be useful for the indexing of documents coming from those various areas of human discourse. One of the reasons for this, probably the main reason, is the vocabulary used. We have at the Humanities end and throughout the Social Sciences what is known as a "soft" terminology and the terminology gets "harder" or more precise as we move into the Sciences and Technology. Probably, as those of you who are concerned with indexing scientific and technical literature well know, it is a popular misconception that scientists and technologists have an entirely "hard" vocabulary. I wish it were so, but it is not, even in fields like Chemistry and Physics, there are enough possibilities for ambiguities, misunderstandings, etc. due to changing or different vocabularies, but if we compare those areas with the Humanities, with the Social Sciences, there's no comparison, because it's well known almost every Social Scientist has his or her own pet terminology, which you have to learn literally in order to understand what this person is saying. Again, as an interesting aside, if you are talking about computers, it is nice to remember that the first practical use of computers for purposes other than straightforward numerical computing was not in the sciences, it



was not in technology, it was in the Humanities. Compilation of concordances to the Bible, to the works of Shakespeare, to the works of the church fathers, and so on, were the first alphabetical or text applications in which people used the computers to manipulate data rapidly and to arrange them in a preconceived sequence. Probably what you expected me to say is how much can we expect or do automatically, which is really what it all boils down to, when we talk about computers. When we talk about indexing, a very large part of the existing literature deals with automatic indexing. Many people have a very crude picture of this, namely that you have a document and you push it into one side of a machine and whoosh! Out it comes to the other side, a fully indexed document which then can be stored away against future possible demand and will be indicated by a pertinent key word so that relevant retrieval can be achieved at once.

Now we all know that this is not yet quite what we have, although in a somewhat limited environment this can be done. I'll say a little bit more about that later. The difficulties we see with automatic indexing are in fact the very same only at a slightly different scale as are the difficulties of automatic translation, by which I mean the actual translation from Russian or Greek. This we very often do not realize even though it is fairly obvious because it is what we do in all kinds of indexing, whether automatic or semi-automatic, or what is sometimes called (a terrible word!) manual indexing. (I hate that word because it implies somehow that indexing is done with your hands, manually. You can do indexing without moving your hands at all, using a tape recorder. Some indexers prefer that. I prefer to call it intellectual indexing. In other words, you exercise your mind to find out what this thing is all about, as opposed to automatic, where no human mind is involved at all, at least, not in theory.) Now let me come back to what I said a moment ago. In indexing, we translate from a so-called natural language text into an artificial language, namely, the language of indexing, at the same time also compressing the text from its full size to a very much smaller size. That is where the difference between indexing and translation lies, because in automatic translations you have a word-for-word translation so that every word in the original is also recognizable in the translated version. So we have a text in a so-called natural language converted into a compressed artificial language. I have to make a digression here and explain why I say so-called natural language, because so much is being said and written about natural language indexing, natural language retrieval, or full-text retrieval as opposed to indexing in so-called controlled indexing languages. These are our subject heading lists and prescribed terms that are applied by an indexer. We have, as it were, a dichotomy where we have indexing by something which is prescribed for you, you stick to that particular paradigm, and you use only those terms and other terms serve only as lead-in terms, in other words "cars, see automobiles." "Cars" is not the legal term for automobiles, you use only "automobiles." Opposed to that is natural language. English is your natural language and whatever comes into your head, you call up that word and if it is in the store, fine, and if you hit upon words that have been used by the author you will find it. And there lies the rub, because linguists always laugh, kind of, at what librarians and information scientists call "natural language," as being not controlled. Nothing could be



further from the truth. Every linguist knows as one of the very basic things that natural language is of course also controlled. There's no such thing as an uncontrolled language. Natural language is controlled by the vocabulary which is spoken, by the way syntax is being used. If I'm speaking, it's controlled by pronunciation, even sometimes controlled even literally sometimes in scientific and technical writing by style, because you recognize the style a particular author uses. All of these things constitute control, but let us now just stay with the most important one -- vocabulary.

No writer uses all the words of the English language, ever. Every writer has his or her own limited vocabulary, and that is controlled by him or her. Now then, what happens is that retrieval by natural language shifts the control from an indexer who acts as an intermediary to the originator, the author, who puts in the control at the input and we will abide by the control that has been put into the system by the originator, which means for the retriever, the searcher, the ultimate customer, that we are playing a game in which the dice are sometimes loaded. In fact, they are always loaded. You can find in principle what you are looking for if there is a free-for-all only if you are using words that have been used at the input by that particular writer. Of course there are computer systems now which make the task somewhat easier for you. If you put in the word "car" to stay with that example I just gave you, the computer will in one way or another tell you that "car" is a no-no. We have our material on cars under "automobiles" so try "automobiles." Would you like me to try to bring up all references on cars? Very good. But a computer doesn't do that by itself. There has to be a human being somewhere in the system who decided at one time that "car" is a no-no in this system and has to be substituted by "automobiles." Which brings us back to square one --that we have an indexer who decides according to a preconceived list of terms, which of course is subject to change.

We decide in our systems that such and such a term is legal and such and such a term is not legal. So there you have control again. And, if you don't have that kind of control, then you really subject the searcher to the whims of the author because you can only hit upon something which is already in the system in exactly the form it is recorded in the system.

So, in summary, natural language is controlled by the author, controlled language in the same vein as indexing that is controlled by the mediator.

PARTICIPANT: I think you're assuming there, you're putting the complete text in the computer. In many cases we have an abstract, and therefore have somebody interacting there. It's not indexing, but now the criteria depend on the abstract rather than the indexer.

ANSWER: Now that doesn't change the picture very much. It may be important. I was not really referring to abstracting because in a way you can consider abstracting as being extended indexing. Instead of assigning to a document three or four or ten index terms, very often without indicating the relationships between them, a point to which I hope to come back very soon, you just tag the document with term a, b, c, d. Now, making an abstract of that document is kind of an extension of this. You put those words into short phrases or sentences,



you link them together by prepositions, conjunctions, articles, and some other words to add more syntax to it, and of course you give a richer background which describes it. That makes the chance to hit that document much better when you use a natural language; however, then again, you need someone to do that. Now there is also not only automatic indexing but there is automatic abstracting, which again is not yet at the point at which it can be done for all or most documents by machine just so. We are just at the beginning -- a trial and error period -- where many different systems are being tried out that may or may not be able to do that. And again, it is dependent on the subject area and many other factors. But I am afraid if I were to go into abstracting too, we would be here until tomorrow morning. Just remember, abstracting in terms of its characteristics is a kind of indexing, a more sophisticated, more enhanced kind of indexing, so we really can't exclude it from indexing.

Now, one of the big problems that we see with all kinds of indexing, whether purely human intellectual indexing or aided by a computer or done entirely by a computer is that which I will now call verbal indexing, which may seem to be a tautology to some of you, because indexing is concerned with words, isn't it? But not really. Indexing means getting your finger on it and saying, "This is it." It is there or it is that and this can be done both by words or by symbols that are independent of any kind of human language, or what we normally call classification systems. If I say "electrical engineering" or if I indicate that same subject by 621.3 which it would be in Dewey, I'm talking about the same thing, except that 621.3 is independent of human language. It means the same for Russian or for English. And it's free of some of the pitfalls that beset human and natural language. Some linguists prefer "natural language" to be an abstract concept, which does not apply to any particular language but just means language as it is spoken naturally by human beings where on the other hand the individual languages, English, French, German, Russian, etc., are "native languages." We speak our native languages, all of which are human languages, thus a genus-species relationship. Some of these pitfalls and difficulties are very well known to you, and I won't go into them now. One is shifting vocabulary. To take an example, in electrical engineering, what up to a certain time was known to electrical engineers as a "condenser" is now a "capacitor." I've never been able to figure out why one is so much better than the other, but it's a fact. Electrical engineers today speak about capacitors and the term "condenser" is old-fashioned. So, if you have all the material about capacitors, which was formerly indexed under condenser, you would have to re-index it, and that happens, of course, frequently. We also have differences in terminologies within the English language, British English as opposed to American English; many technical terms are different on both sides of the Atlantic and you have to gear your indexing efforts to the audience that presumably is most interested in what you have.

We have the problem of ambiguity. Think of the word "spring" where you have to indicate whether it's a mechanical device, whether it's a source of water, whether it's a season or any of six or seven meanings. We have variants, again British-American, and this becomes, of course, worse if you deal with more than one language.



Now, I will not dwell on these things because they are well known, and they exist as much for automatic indexing as they exist for human intellectual indexing. Something, in other words, has to be done to feed information about all of this into a computer, which is not the easiest thing to do, and sometimes it is impossible to do that, because many times it depends on the recognition of context and that is one thing at which computers are not particularly good. In other words, they do not have what we call an image of the world. They only know the data input into them. How they relate to past experiences in their environment is sometimes very difficult, almost impossible, to teach to a computer. That relates, for example, to the case of ambiguity. Where we are able in most cases to figure out possibilities of ambiguities in the text, if the text speaks about spring, we know that this text was written by a mechanical engineer so he couldn't possibly speak about the season, for example. Or, maybe he could. Maybe there is a paragraph in that paper that says "In the spring of 1978 . . ." "the tests performed on such and such a spring under different temperatures and climatic conditions," turned out to be quite different." Now, when you read that you know intuitively that the spring he had been talking about in the report was the mechanical kind of spring, and the spring he was talking about when doing the test referred to the season of the year, but do you think that a computer would recognize that? It could only if it had been first specifically instructed and I don't think at the present time it's possible to do so, at least not economically. I'm not saying it can't be done. Almost anything can be done if you have enough time, manpower, money, etc. But normally you wouldn't do that. Normally the spring that indicates the season would be indexed in automatic indexing simultaneously with all the other kinds of spring. But that is not the most far out or outlandish example I could give you. You will find many such examples, for example, in Astronomy where fully automatic indexing would be disastrous sometimes because of the names that various of the constellations have and the way astronomers use everyday terms in ways peculiar to their specialty.

All indexing is essentially quite paradoxical. We try to make documents that were written yesterday--yesterday may be anytime from yesterday back several thousand years--retrievable for users of tomorrow and that may be five minutes from now or fifty years from now, and the readers or users of tomorrow may have different needs or different terminology, a completely different world outlook from the one we have, so that one could say in a sense that the whole thing is impossible to do because we can do it only for our contemporaries or for people who are looking for things in the past and kind of living in the past.

But this is not what we are doing. We are indexing things in order to make them retrievable for potential future users. That's the rationale behind indexing. So we have a kind of paradox that is similar to the well-known one since antiquity of Achilles and the turtle. We all are familiar with that. The paradox says that Achilles can never catch up with the turtle. Of course, we know that is not true. Achilles, starting 100 feet behind the turtle in a few seconds will overtake the turtle. So that it is a fantasy about indexing to say that it cannot be done. But we do it on the assumption that at least the majority of terms that all of us have used in the past or use presently will

somehow also be useful in the future, not because those same terms will also be used by future users. No, they may use different ones, but when they refer to something which has been indexed now and refers to something which has been written down in the past, then they will be interested in just that thing, which was called that when it was written down.

So, to come back to the example I gave a few minutes ago of condenser and capacitor, if an electrical engineer for some reason difficult to think about, but assuming there is one, wants to find out what was written about condensers some 40 years ago, maybe for historical purposes, he will have to look for "condensers" because that is what the thing was being called when it was being written about at that time.



## THE HUMAN APPROACH TO LIBRARY SERVICE

John Sherrod

Since about the time of the 1958 International Conference on Scientific Information held in Washington, when several papers were presented on the use of computers in information retrieval systems, the professional literature has exploded with reports of computer applications in all areas of library and information science. Today, no one would dream of planning a technical meeting in this field without a heavy dose of automation in the program, and our meeting here is no exception. While not denying the important role of computers in information handling, it must be remembered that other important elements are at work in any successful information system.

There have been occasions in the past when some of the leaders in the movement to modernize library practices felt compelled to speak out against what often were wild claims of so-called computer experts. As early as 1961, Dr. Mortimer Taube, one of the first successful entrepreneurs in the information business, wrote about the "myth" of the computer. He rejected the idea that increased automaticity and decreased human participation in systems was always desirable. He noted, "there should be discoverable principles in terms of which the degree of human interposition and the degree of automation for maximizing the result and minimizing the investments in any specific system can be determined." 1/

Dr. Jesse H. Shera was another giant in the information field in the sixties, and while dean of a major library school was also responsible for a good deal of research into the use of computers in libraries. It is in this context that his remarks at a recent informal reception given him at the Library of Congress are significant. While reminiscing about his earlier days at the Library, he commented that he was glad that the new Librarian of Congress, Dr. Boorstin, was a historian and not a scientist because it meant that humanism would be brought back to the Library.

I cannot tell you for sure what Jesse meant by this and he didn't offer any special explanation. But we can surmise what was behind the statement. The popular trend in computerizing first this, and then that, aspect of library operations is so dominant today that we risk losing sight of the important role of the educated and dedicated human being in the library setting.

As mechanization increases, will the professional in the library increase in stature and become more professional or will that person likely become a technician? In my opinion, there is considerable evidence to support the latter view. The growth in recent years in the number of library technicians has exceeded by far the number of professional librarians and that trend is likely to continue.

1/ Computers and Common Sense. Columbia University Press, 1961, p.83.

This is due in no small part to the increasing emphasis being placed on the cost of library service rather than on the utility of the service. The latter, of course, is more difficult to measure. Somehow it seems so natural to assume that automating the process will make it better for everyone. Experience provides ample proof that such is not the case.

Documentary forms of information sources are certainly cheaper and easier to obtain than personal ones. But most people clearly prefer personal sources of information over impersonal ones for most purposes.

If we impersonalize information sources in the library to any significant degree by the automation process we can only expect further deterioration in management and user support for the library. Above all, libraries are people-oriented institutions in which everyone, workers and users alike, must be treated as human beings, not as cogs in a machine.

Rather than resist the inevitable process of computerization of libraries because of this risk, we should seize upon the opportunity to insist on increased professionalization of the library staff. This will require that library schools quit training librarians and start developing people competent in the functional areas of the information transfer process by providing each student with a mix of technical skills, conceptual background, and human relations skills. It is likely that the normal process for acquiring an accredited degree in the library field will have to be extended by at least one year, but the added cost in time and money would be a good investment. And for those of us past the library school age, if there is such an age, we can benefit as well from a good continuing education program in the same areas.



## TASK GROUP 4

### MANAGING LIBRARIES IN THE 1990s

Discussion Leader: Ann Hall, U.S. Army Coastal Engineering Research Center, Ft. Belvoir, VA and Sarah Mikel, Army Corps of Engineers

Management after the computer takes over includes management of government documents, public relations, education and training requirements, and trade-offs the manager may be forced to consider between technology and information resources.

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#### Wednesday, 3 October

1050-1200 - Session 1

\* Organization of program and goals of task group - Ann Hall, Army Coastal Engineering Research Center

1330-1500 - Session 2

Management of government documents in the 1990s -  
Bernadine Hoduski, Joint Committee on Printing, U.S.  
Congress

#### Thursday, 4 October

0920-1000 - Session 3

Public relations in library management in the 1990s -  
Diana Proeschel, Library Division, Office of the Adjutant  
General, U.S. Army

1000-1045

Trade-offs between technology and information resources -  
Paul Ryan, Ballistics Research Lab, Aberdeen Proving Ground

1045-1130

\* Education and training requirements for library managers -  
Frances Quinn, ADTC, Eglin AFB

1330-1515 - Session 4

Management of a military library program - Barbara Collier,  
St. Louis Army Engineer District and Cynthia Yoder,  
Jacksonville, Florida Army Engineer District

#### Friday, 5 October

0950-1200 - General Session

Task Group summary - Sarah Mikel

\*Paper not available at time of publication.



Task Group Leaders  
Sarah Mikel, Army Corps of Engineers and  
Ann Hall, Army Coastal Engineering Research Center



## MANAGEMENT OF GOVERNMENT DOCUMENTS IN THE 1990s

Bernadine Hoduski  
Joint Committee on Printing  
U.S. Congress

When I went to library school, I felt compelled to and did research on the Fort Peck Dam in Montana which is, or was, the biggest earth-filled dam in the world and is where I was born. I did a lot of research on the dam itself, the attitude of the people who worked on it, the attitude of the people who were invaded by the people working on it, and on the little towns that sprang up as the result of it. In searching the references on documents, I was frustrated in that I was able to get my hands on very few of the bibliographic references listed, and that was when I got my first education on the lack of availability. You can find it mentioned, but you can't find the document.

When I went on to set up a library for the Environmental Protection Agency, I found myself doing a lot of research on dams, and I was doing the opposite of what my father had done for thirty-five years. I was finding ways to keep dams from being built; and/or if they were going to be built, to make them compatible with the environment. I won the undying support of the EPA staff with one of my first research projects on the stratification of reservoirs. And with this information, EPA was able to persuade the court to re-do the plans for a dam which would protect the fish who lived in the river and the reservoir itself. As an EPA librarian, I became quite familiar with the Defense Documentation Center and went so far as to set up a workshop for the people in Region 7. To my amazement, the local Corps of Engineers librarian had never heard of DDC and was probably the most attentive member of that workshop, and I understand has gone on to use the services extensively ever since.

I also worked with a wife/husband Ph.D. research team during an environmental impact statement study on the Missouri River for the Corps of Engineers and they used my library extensively. I was very pleased that in this instance, the Corps and EPA were working together to protect the Missouri River which is one of my favorite rivers.

All of these thoughts kind of came back - I hadn't really thought about this for awhile; I don't run a library anymore, I'm not purchasing books, I'm not putting books on shelves, I'm not having people come in and ask questions, though I do get a lot of questions for a librarian in my position. I'm very careful not to tell people I am a librarian less I get inundated with reference questions from my fellow congressional staff. It just got me to thinking. What would I be doing - what would you all be doing in 1990 if you were actually running a library rather than setting policies for libraries? We're going to be doing a lot of the same things. We're going to be helping people cope with the world they live in. The changes I see are that we'll be doing it with different kinds of equipment (and that we're already getting into), doing it with different kinds of equipment in a different way, but basically we'll be doing the same things.



Another thing that was brought home to me during the last four or five years, in meeting and talking to librarians from all over the country and the world, is that during the 1980s, we're going to have to prove that we're worthy of being an assistant in the 1990s, and it may be very difficult in the next 10 years proving that we should really even have jobs; that we should even have libraries in the wealthier agencies. I think this is going to be a real problem. I think the recent proposed death of HEW Headquarters library should send a chill up the spine of every Federal librarian. The Assistant Secretary for Management and Budget, in a letter to HEW employees which was issued after a protest arose because the library was being disestablished, said, "It is neither easy nor pleasant to cut back or eliminate a worthwhile activity or disrupt the lives of staff devoted to its service. The Congress, however, has passed laws that reflect the public's demand that Federal employment be limited, that all nonessential services be curtailed. The HEW library is a casualty of this hard time of austerity. If we could do all the major things with part of us and still have a good library, we would." In earlier remarks, he referred to low utilization of the library, that only a fraction of the library materials were used, a history of under-funding almost 20 years in length, an out-of-date collection, and the fact that if they were to have a good library, it would take a lot of money, and obviously people in a position to make a policy decision did not want to make the effort or get the money. I think it is rather chilling to realize that this is considered a nonessential service. I think that's the key. Either our library is going to be so basic to the survival of agencies they can't live without it, or forget it if it isn't basic. It's also obvious that somebody didn't get to this person who had life and death responsibility over this library. So sometimes, it's the most unobvious person that library service should be going to. You should be finding out the person who has life and death responsibility for your library, and you should give that person damn good service, no matter what - if you have to make up some kind of service. You should insist that you're involved in the meetings to find out what this person, or a number of persons, need to survive in their job, particularly in the more political. I think Government agencies have become more and more politicized no matter what agency you're in. In most cases, these political appointee types come in who perhaps are used to excellent library service on the outside, or who have survived without any library service. You have to get to them, and you don't have much time when they come in. If you can't get to them in the first couple of months, I think you're in a lot of trouble. A lot of libraries tend to rely on researchers, laboratory and other people who come in and use their libraries. If these people don't have any political clout within your agency, they shouldn't be getting first service. They're extremely important, and I think we all love researchers and we all love people that love libraries, but if they don't have any power, then the other people have to be first, otherwise you won't be able to serve these people. I believe that in the 1990s there will be computer terminals, microform readers and printers, electronic transmitters of data, audiovisual equipment in practically every library in this country and that every library will have access to vast data bases of information about information. Few libraries will be in the business of amassing warehouses of information, in order to insure the provision of information to their



readers. The infant world of networking, resource sharing and on-demand printing will be full grown. The 1970s have seen tremendous change in the actual functioning of libraries as well as the attitude of librarians. Users of wonders that have been wrought by the machine people are no longer sitting back in wonderment at the miracles. These miracles are being taken for granted by a lot of librarians, particularly by people in military libraries who are probably much farther ahead of public and school librarians. User groups of machine-readable data files and cataloging networks are springing up all over the country. Users of automated service files are organizing and influencing the future of automated libraries. They are giving the originators a lot of feedback and in some cases they're taking over the operation. They're no longer content with being just the recipients of it - they want to be part of the action. The new technologies and their eager acceptance by librarians have meant the death or change of a number of traditional programs. We're all aware of what putting LC cataloging data on MARC computer tapes and selling those tapes to one and all has done to the sale of LC paper catalog cards. LC has had to evaluate their whole program. Are they in the business of selling bibliographic data and the supporting tools or are they in the business of selling catalog cards? Fortunately, LC has been wise enough to decide they are in the business of selling bibliographic data. They're not in the business of selling any particular format. They're undergoing tremendous changes in the way they're going to disseminate this information. And in the 1990s, I suspect that nothing is going to be going through the mail from LC. They're all going over data lines, or tele-facsimile or telecommunications or whatever. Automated cataloging systems, as our speaker at lunch pointed out, have forced librarians to evaluate their age-old cry about cooperation and resource sharing. I think in most cases, it's just been hollow words. Everyone's said it and no one's really meant it. Now with shared cataloging network, librarians can no longer ignore the consequences of really sharing the workload. Sharing means standards, procedures, compromises, re-allocation of resources, re-education of staff, and lots of meetings, lots and lots of meetings. That's just the worst part of it. Librarians can no longer say that what I do in my library will affect no one but my users. A substandard record in a shared automated data base will affect every library in the system, and eventually many, many other systems around the world. The entrance of Federal librarians into the Ohio College library's network has had tremendous impact on many programs. The FLC contract made it easy for the Government Printing Office to become a part of an automated cataloging network, made it easy for GPO to adopt radically different cataloging rules and standards than those they had used for over 80 years. It has made it possible to get tapes back from OCLC, process those tapes, and make them available to LC for more processing and sale to the world. It made it easier for GPO to speak from a position of influence in their negotiating with the Library of Congress on all interpretations. Being part of an automated network makes it easier for GPO to meet its cataloging schedules, since they can benefit from records already in the system or can build from their own earlier records. They can generate cumulative indexes faster and easier, they can get the printed catalog printed faster because the printers are dealing with a tape rather than handset type, plate or something where you have to type it,



photograph it, etc. GPO's being part of an automated system has impacted the policies of many libraries throughout the world. Libraries are reevaluating their cataloging policies for Federal documents. Some are including catalog records for documents in their data bases, or their book or COM catalogs. Some are simply getting a tape from LC and putting it up for the use of the records department. Some are buying service from BRS or Lockheed, and they're searching the monthly catalog on-line, and simply using that as their catalog. Some are pressuring their networks to include the computer tapes in the data bases they are tapping; for example, the Washington Library Network has the monthly catalog of Arlen divided up. I think the New England people are working on getting it up. GPO's being part of an automated system has made it possible to share information about the existence of Federal publication which GPO never knew about before. Agencies are cataloging their publications, and GPO is able to identify them and get copies, and then they're able to take that agency-generated record and add some additional information and make it part of a national bibliographic system. Automated cataloging systems have made it easier for GPO and LC to cooperate in a program to establish main authorities. GPO is now establishing all the main authorities for Federal agency names. LC has given GPO training in how to code these names under AACR II. The LC-GPO cooperative project has been so successful that it's been used as a model for an LC Testings Cooperative name authority project. Automated systems have also made it easier for LC to start planning cooperative projects with the National Library of Medicine, National Agriculture library, and a number of university and public libraries throughout the country.

The Joint Committee on Printing has been intensely interested in what's happening to libraries and what's happening to information systems and new technology areas. In fact, practically everyday, the staff and members agonize over some new technology or some new request for a waiver to use a new technology. How will this impact our distribution of information? How will this impact the old-line agencies? We are looking at our regulations which we feel aren't looking toward the future. We are looking toward the very future of our own committee and the future of all publishing in the Federal Government. During the next year and a half, the JCP will be going over its regulations and we are probably going to set up little committees of experts throughout the government, and outside of the government, to talk about various kinds of standards of various kinds of regulations. Are they really adequate? We don't want to just bring in the printing officers who have traditionally been our liaisons. We want to bring in people who are really going to be impacted, for example; those in microforms, bibliographic control, bibliographic material in publications, in-house printing establishments, what kinds of equipment, you know, the whole impact of on-demand printing, laser printing, xerography, and everything else. These drastically impacted what we have thought of in the past as the printing establishment, or printed publication. When is something a publication? If it is in the computer and you can print it out on demand, is that a publication? If you have a master microfiche and you produce one copy of it each day for the next 200 days, is that a publication? I think you'd all have to agree that is -- if it's going out to the public in some form. If you look at the old definitions, it doesn't fit any of the old



definitions of what a publication is. Getting back to my association with the military part of the world, we have a tremendous number of people coming in from the Defense Department asking for waivers. Just last week the Army came in and wanted to put 5 indexes, the DA Pam 310-4-410, etc. on microfiche and they have a contract with a data service outfit, who will generate this material into microfiche, and right now three of those series are in paper and two are in microfiche. Now, all five of those series are going out as depository items to close to 600 libraries. Well, the gentlemen who represents the Army, several gentlemen who represent the Army, came in and I was totally amazed at some of the statements they made. I shouldn't really be after this many years in the government. For one thing, they couldn't understand why anyone except soldiers in the field would want these publications. They were amazed that 600 libraries were getting these indexes. They just couldn't understand what in the world they were doing with them. We talked about the information they would include in the header area. They couldn't understand why they should worry about what librarians wanted in header areas. All they had to care about was the soldier in the field. They did agree, finally, that perhaps libraries might have the same users, that soldiers in the field might just happen to be users of libraries, and what helped users of the libraries might just help soldiers in the field. We did get them to agree to adding more information to the header area, which would make it a lot easier to find in a file. We also got them to agree that they would continue to supply the depository copy. The law is a little strange in that if they print it at GPO, GPO will provide the copy. But if they print it in-house or under contract, DoD will have to come up with the funds to pay for the copies. Now in the past, 600 copies of paper products 400 or 500 pages in length would be quite a large budgetary item, but when you consider making 600 sets of microfiche, it's minuscule, really.

So, obviously, even though they came in talking about the tremendous amount of money they would save by going to microfiche, they still had enough money that this didn't bother them, whereas some agencies would have cardiac arrest if you forced them to do this. We've gotten a tremendous number of waivers. The Treasury Department wants to put out a comic book, they came in and also told us they don't want this comic book to go to libraries because libraries obviously don't serve the people this particular comic book is warning, pregnant mothers whose fetuses might be affected by alcoholism; and, of course, no alcoholics ever go to libraries! That's why they didn't want this comic book to go to libraries. We convinced them that this is not the case. We visited some major libraries in the past few months and met a lot of people in the document department who filled the bill. It's a real educational problem, and what amazed me is that these couple representatives from these two agencies should have been educated. Probably some of you may have even attempted to educate them about libraries and what libraries do. Several of them even sat through our six months of meetings (we had an advisory committee on revision of Title 44) and I know that several of them sat through every Wednesday, and it seems a little impossible that they would not have gotten the message, as we had 4 librarians on the advisory committee, who were constantly screaming about access and this kind of thing. So we've



come to the point where, when issuing any kind of a waiver, whether it's to buy equipment, whether it's to contract, whether it's to go to a private publisher and under one of our regs, if you are going to publish something privately, with a commercial or non-commercial price, you need a waiver from us. I realize that a lot of agencies, if they were taken to court, would go to jail for a thousand years with all the violations of waivers they've done. Up until this point, I really didn't have the accurate proof, but a fellow committee, the Senate Governmental Affairs Committee, in cooperation with us that we would file as partner, did a study of all the federal agencies and they published a committee print "Lack of Accountability in Government Public Information Publishing Programs." They found out that in an 18-month period, January 77 through June 78, that 102,000 publications were issued and distributed by government agencies. During that same time period, the monthly catalog cataloged about 66,000 publications. Now there were a lot of publications that someone was giving to somebody that weren't making it into the mainstream. Now I don't know how many of those made it into NTIS or DDC or whatever. We not only worked with them in doing this. Maybe we were a little sneaky, but sometimes you have to do that. They told these people the truth, because they didn't realize or they didn't expect anything would be done with this information, not realizing the raw data would be turned over to our committee, which was then used to verify whether those things had appeared in the monthly catalog, and which we have people in the process of doing. Any of these that has not appeared, the Agency, Secretary, whatever, will get a letter requesting a copy of every one of those publications, which of course is not making GPO too happy because they increased their staff a little to take care of the workload. It takes something dramatic like that to get peoples' attention.

Also, the Joint Committee on Printing has been very active in encouraging cooperation. Our particular law says we're supposed to eliminate duplication, waste, etc., in publishing and distribution, so we have been sort of the omnibus people between LC, GPO and the Federal Library Committee in getting them to talk about cooperation. I honestly don't think that those agencies would have ever really gotten around to cooperating on the scale they are, without an outside body pushing them to talk with each other. At the beginning of the negotiations, which was almost two or three years now, it was like an armed camp. Now it's like old home week every two weeks. Great meetings! I can't believe I'm witnessing LC and GPO talking to each other the way they are. But our argument was that LC and GPO are both legislative agencies, they're both eating out of the same hand. We have Appropriations Committee which is screaming every day about the excessive spending in the legislative branch, that we couldn't tolerate this duplicate cataloging between these two sisters. And, I think the support of the Appropriations Committee and other appropriate committees such as Joint Committee on the Library (fortunately the three Senators/Representatives I work for are also on the Joint Committee on the Library) makes it a lot easier to get people to cooperate. I think that LC has learned a tremendous lot in this process. I think that librarians have learned a lot, in that they've seen the value, they've transformed their attitude towards cooperation. They no longer think that they're the only ones worthy enough to catalog a



publication. And so, they've gotten into many cooperative projects. And I think this is extremely healthy that the sort of national library, is into this way of sharing. Also, it sort of gets to be an incestuous relationship here. ALA government documents roundtable has a cataloging committee of which I am the chair. So, when I go to these meetings, I am representing basically ALA and my own committee on a manual which Sarah Vaughn has written. Sarah's written a document on machine readable data files. What we're trying to do is make sense out of AACR II, so if you sit down and start to catalog a government publication, you'll have some assistance in figuring out the rules. Some of the rules are a great improvement, I think. Some of them are stuck backwards. I'm interested in the rules. I was a representative to the catalog publication committee, four of the worst years of my life! Talk about meetings, I think I would chew through 20 Georgia pecan trees trying to keep my sanity in those meetings. Protein helps you survive in a meeting, if any of you ever have any of those problems. After we lost any number of battles, won a few battles, the documents people and I (say the Sci-Tech, because I feel I'm a Sci-tech person) we decided the only way to capitalize on the few battles we'd won was to write our own manual and emphasize what you can do in those areas.

The other thing I would like to talk to you about is our proposed bill. All of the waivers coming in and all of these questions and meetings, everyone asking the Joint Committee to sort of set policy and tell us what's going to happen in the future and change Title 44, which is a piecemeal title, having started back in the 1860s and a lot of it is based on 1895. This is not really bad because the Constitution is an old document too, and I think it's still a valid one. The basic concepts that Title 44 put out are excellent, it's just that things have gotten out of kilter with the new technologies and the growth in our government, so that it became impossible for one agency in an old world to do what Title 44 expected them to do. But now with computers, microfiche, and telecommunications, I think it's again possible for an agency, cooperating with other agencies, not trying to do it all themselves, to master the problem. If any of you would care to get any of this material, drop me a note or ask me. This is our committee print from our Advisory Committee which we think is a very unique advisory committee and an awful lot of fun. We have representatives from CIO, Printing Industries of America, the Paper Institute people, Information Industry Association, Federal Library Committee, ALA, Senate Rules and House Administration Committee, and also an OMB which was quite a treat all coming together every week, got together and really started thrashing things out. Basically, what this report does is point out more areas that need some decision making. That was the beginning of our revision process. My boss, Frank Thompson of New Jersey is our chairman, introduced a predecessor bill to this. This is a cleaned-up version of the Senator's Sep 27 HR 5424. Any of you who want a copy drop me a note. There's our latest proposal for revising publishing and printing laws. Our first version got a tremendous amount of interest, in fact, it generated so much controversy that OMB could not come to a decision as to whether they were going to support it, and would not clear any executive branch witnesses for our hearings, which made it a little difficult, 4 days of hearings and not a single executive branch response. We got a



tremendous response from them on an informal basis before and after. We hope that this version of it answers some of the problems that people had with the bill. I think the most astounding thing about the bill is that first of all, this version changes the concept of printing. Well, we've never been talking about printing. It's now called the National Publications Act. What we've done, we've abolished our own committee, which is probably unheard of in government. We've proposed our own abolishment, which would mean January 1981, I'll be looking for a job. We've also abolished the Government Printing Office and what we've done is combine these two bodies into one and set up a commission. The commission would be somewhat unique in this area, because it would have seven voting members and three ex-officio. Of those seven, one of those members would be a librarian. One of them will represent the printing industry. There's one who will represent the unions, which is even more surprising than having a librarian on a commission. One will represent the IIA types, the private sector, the information producing types and then OMB, the Chairman of House Administration, Chairman of Senate rules would be ex-officio members. These people will be doing what we're doing on the JCP, establishing regulations, establishing policies. It will actually be like a board of a large business, a board which will be running the Government Printing Office. GPO will now be called the National Publications Agency and be run by the Commission rather than have a Public Printer appointed by the President, he in turn appointing a Superintendent of Documents which is often a strange process and you never know what kind of superintendent you're going to get. Although the one we have now is a terrific person. We were just lucky on that one. I could be a little prejudiced. He's from Montana and so am I. Anyway, we will no longer have a Public Printer. These commissioners will be appointed by the President, then confirmed by the Senate, then they will hire, sort of on a contract basis, a Director of Production, Director of Administration and a Director of Distribution which will be the equivalent of the Public Printer and Superintendent of Documents, but they will be as equals, which will put the publication and distribution aspects on the same level as printing. Unfortunately, in the GPO and even in the JCP and the Congress, the process of printing has always dominated, rather than what you do with it after it's printed. So that's an entirely different approach. I won't go through everything in here, but one of the things that I think will be extremely interesting is our definition of the term public document. It means a document, publication, form, machine-readable data file, microform, audio or visual presentation or other similar matter produced by printing or other means for official use of the government entity. And then they just say that if its administrative only, doesn't have public interest, or classified, or for defense reasons or whatever, it wouldn't be included. And our definition of printing is very much expanded to include all kinds of electronic means, anything that we could perceive coming down the pike that would really be some form of printing. These two definitions are very important because they govern responsibility for the agency.

The distribution of public documents will determine what's going in the Monthly Catalog and what's going to be distributed to the depositories. The military academies are continued in the Bill as depositories and we also changed the law in that any entity of the government,



for example a subagency, could qualify to be a depository. We've also made the Library of Congress into a depository. In the past they've had their own special designation. We've made the National Archives into a depository. Basically, what the group that wrote the bill decided is that we want to eliminate all special kinds of distribution and if it's going to go out to the public free (of course, it's not really free, it's paid for with tax dollars) we want it to go to libraries first of all, and we want everyone to qualify as a depository. If they can qualify as a depository, and they'll give it proper care and make it available to the public, they will get the publication. Otherwise, they can buy them or get them some other way. The other big change in here which has a lot to do with the new technology coming down the road is that the NPA will have a national collection of all documents that they've processed through the monthly catalog. Right now, they keep everything that goes in the Monthly Catalog and have an agreement with the National Archives to be stored over there. You may have been reading the latest scandal that the archivist resigned because of the condition of the collection and the head of the printed document section is taking an early retirement, and so on, because of the deplorable conditions the collection was kept in. The idea of GPO giving this collection to NARS was that it would be used, it would be put into condition that people could come in and use it, that it would be shared throughout the world. We don't feel that that has exactly happened. Not that the people working with the collection are to be blamed, but the higher level people did not give it adequate level funding and support, etc., the typical situation in a lot of agencies. Anyway, the idea is that you'll have one national collection and no library throughout the country will have to take everything. Now we have the concept of regionals. Someone in each state agrees to take everything, and supplies everybody else. With microform technology and on-demand printing, there's no reason why any library other than the main one should have to take everything. So, if you're not smart enough or your mission changes or your curriculum changes, or something happens that you change your collection policies, and you didn't know that ten years ago when you decided to select the series, you can now go back and get that material. If somebody comes in and says I want a DA-PAM-301, you can go back to the headquarters and they'll either send it out to you on microfiche or some other form, depending on the way the technology develops. So this way will enable people to develop their collections on a much more sensible basis, at least we feel this is going to happen. We've abolished the concept of regionals, though that concept will appear in supporting documentation to say the commission can reestablish regionals in a much more sensible manner. For example, would you want a regional in every state or would you possibly want one in the New England region? What would you want regionals to do? Are they to serve every library in their area -- not just other depositories, or what? Are they a focal point, like in a political campaign, you have an advance person who goes out and sets up meetings, etc. If NPA is sitting here and saying, "We're going to provide training and such and such, who is our contact in this particular area? Who knows what's going on? Who knows the political situation?" So you look at the whole system anew and find libraries that want to do these kinds of things. A lot of your best libraries have stayed out because they didn't want to



collect every document that came down the pike. I think that's a big improvement. They have another little thing in here about audio-visual materials which I don't really quite agree with. That rather than let libraries select what they want, that they can only get them on load, which is slightly ridiculous, because some materials you'd use every day and some you'd use only once in every ten years. Their concern is because audio-visual materials are so expensive to reproduce and the audio-visual people told them the dangers of reproducing films and all that kind of thing. I think if we get enough feedback on that, we'll get this part of the bill changed so it will make sense. The bill makes the agency subject to the Civil Rights Act, the Administrative Procedures Act, and regulations have to go to each group interested and get their feedback, they have to publish in the register and all those kinds of things. It doesn't affect a program like NTIS that is set up by another law that says it has a special right to exist and to sell, but any program within any agency where the agency has taken upon themselves to distribute or to sell or whatever, they will have to come to this agency for a waiver for permission to do that. It abolishes all those kinds of programs. It also goes in and wipes out special exemptions for a lot of agencies that for some reason convinced their sponsoring committee to exempt them. This happens all the time. They sneak in a new information center or some kind of exemption in all these bills. The final thing that I think you would be very interested in is a concept, and this has been going around the government now I think for a couple of years - information resources managers. They'll have to designate someone who'll be responsible for cooperation with the Director of Production Services for coordination of public printing services for such entity, for certification to the Director of Production Services that any public printing service requested for such entity is authorized by law and is necessary to the public business. He'll also be responsible, in cooperation with the Director of Distribution Services, for coordination of distribution of public documents for such entity and for furnishing to the Director of Distribution Services such information as may be required to carry out Section 705, the section on the cataloging of all documents. So, it's trying to set up a position so this person will not only be in charge of deciding whether something's going to be printed, but for instance, whether printed at GPO, in-house or by contractor, the whole distribution process and the indexing process so that this person's going to be responsible for the publication from its birth to its death. And hopefully, this will get us some kind of national bibliography of government publications. The bill is not designed to put a lot of people out of business. It's simply designed to make it easier to provide this public access or public accountability. The NTA will also be responsible for setting minimum bibliographic standards for government publications, which would mean things like the title page, indexing for individual publications and overall indexing standards at every agency, including NTIS, which will have to meet those standards, and it says they are to be established in consultation with the Librarian of Congress. But considering the agency will be responsible to the Administrative Procedures Act, it will give an opportunity for every unit affected, within and without the government to come in and talk about bibliographic standards. What is it that you need? What is it you want? It doesn't mean that the Library of Congress standards will



prevail. Up to this point, you either went along with the LC standards and did what they wanted or forget it, you set up your own. You didn't go into LC and say, or try through some association, to say, I don't like this and you're not doing what you have to do to accommodate my kind of publication. We hope this will go a long way toward getting all the bibliographic agencies in the government talking together and as our luncheon speaker was talking about, maybe come to some agreement based on what it is we need rather than what has somebody already done. I've heard that argument a lot. Everyone has just invested millions of dollars in whatever they're doing. If you want to get the discussion on this, the Congressional Record for September 27 takes each section and kind of gives you some background information - why we wrote it the way we did, and then the bill itself.

Any of you who haven't gotten the latest edition of The Government's Depository Libraries, if you'd like to get a copy, I'll be glad to send it to you. I always feel like you've got a couple of changes in each job you get to make a mark, something that's going to be around for a long, long time. This may not be a very important mark, but this thing hasn't been changed, I'll bet, for twenty years. It took me two years to convince them that they should include the complete addresses for every depository, because I've seen countless staff people in members' offices looking up the damn address zip code to send something out to some library, or something like that, or I've seen librarians who want to get a mailing list have to go through this, so I'm hoping we'll save a lot of people a lot of agony through the years. It was a little thing, but I was very pleased.

One of the other things that I was one of the pushers for was recognition for depository libraries. Sometimes it's very difficult to know that it is one, so we came up with a little sticker they put on their libraries to indicate to people. They'll use something better in the future, but this was a beginning of recognition.

One other thing that you all might not be aware of is that the bills are being put on microfiche, Special Bills, and this is the finding guide. They're not being filmed in numerical sequence, which I'm not very happy with, but this shows you what fiche it's on and I'm very happy with that, because bills are a pain in the neck and I know most people can even get a few, those they get they throw away and of course research can never find them, and have to end up going clear across country or something to get a bill, so I think this is really a great step in the right direction. And the bills are now in electronic composition so hopefully, in the next Congress, we'll be able to generate the microfiche in numerical order so that you'll actually be able to use it in a better way.

We're also looking at microfiche for the serial set. How many of you know what a serial set is? It's the compilation of the Senate and House documents and reports. I heard a speaker (D. Brown) say that if he were alone on a desert island, the book he'd want to take with him was the serial set. I never thought anyone would say that, but he did. And it was really great, because we had set up a committee to study the serial set. That's the sacred cow. I mean it took me at least a year to even convince people we should even set up a committee



to look at this sacred thing, and as it turned out, we got all the users, we had a representative from the depositories, LC, National Archives, the Senate and House libraries and all the people at GPO responsible for putting it together, and we met every two weeks for about two hours each time for 8 or 10 meetings, and talked about it and kind of inched our way up to a final decision, and in fact Mr. Thompson should be signing a letter today to GPO directing them to put the serial set on microfiche, and to circularize to all the recipients to see if they want to get it that way. We figure with a very conservative estimate, that this will save over a million dollars a Congress, and we are very much under pressure from the House Appropriations Committee to save money. In fact, they've threatened to cut our budget in half if we don't prove that we're saving money. This year we have managed to save more than what our budget is. Question: When will this come about? Ms. Hoduski: We're hoping for this Congress, the 96th Congress to be on microfiche. You know, you've got your unbounds that go out, and the serial set is really the compilation. We're not eliminating the bound entirely, because we feel there's a need to keep at least several bound sets. If anyone wants to continue to get the bound, and has the space for it, they can do that. We also reached a unique compromise; we had great debate about the numbering system and how people used the material in it, whether people came in and asked for this hideous serial number or for House Document 152. There were differences of opinion. Some people did one way and some another. When we were producing microfiche, we wanted it to be done immediately, almost as soon as the paper document. We want that serial set microfiche produced almost on the same day, if possible, so we agreed that the fiche would be filmed and produced from the unbound, of course, but we would provide guide cards, which would give you the serial set number and the volumes behind it. So, if you are insane enough to want to put your microfiche in that order as some of our users indicated, you can do that and it will correlate with our bound serial set, as some people will continue to get it in both versions. I think the majority of the depository people will file them the same way they've been filing their unbounds. We also agreed, that rather than put out a numerical list, which I have found to be the most un-useful tool in history, that that will become a supplement to the Monthly Catalog and the cataloging information for each individual report that now appears in the Monthly Catalog, but at the end of the session, or end of the Congress depending on how it works out, it will generate a supplement like the serial supplement to the Monthly Catalog which will list all of the publications, complete with their serial set number and their full cataloging and will generate a series of indexes. It'll all have to be worked out during the next year. It's too late to do it for this particular Congress. We'll do it for the 97th, but we might possibly get it done for the 96th. I have to now start meeting with GPO to work out how this is going to happen. It was just a matter of getting our committee to agree to these very radical changes in the system. There were many other little changes we agreed to do, like within the serial set, they're going to be in numerical order, rather than whatever bizarre order they were in before, but within their class. It's a set of documents, etc. So it really turned out to be a very fun committee. I had a great time.



I'm chairing another committee which is to improve the Congressional Record Index. It's a very delicate problem because you have to deal with the Senate and the House, have to deal with the Secretary of Senate, the Clerk of the House, have to deal with GPO, have to deal with our committee, and you have to deal with the Library of Congress. There are a million players involved in this. What we want to do is come up with a way we can get the record cataloged every day, and get that indexing available to everybody every day on-line or produced on microfiche or whatever.

Okay, if there are any questions, any advice, anything anyone thinks we ought to be doing? Question: Bernadine, excuse me, before you take questions, would you please give the group your address, in case anyone wants to write you for any of these documents. Ms. Hoduski: Yes. Address to my name, and the Joint Committee on Printing, and that's S (as in Senate) 151, U.S. Capital, Washington, D.C. 20510.

In answer to a question about the 102,000 document study, what I suspect is that when Senate governmental operations did their committee study, they probably didn't get all the information back from the agencies. The binders that came back are absolutely unbelievable. They were told to go out to the field offices, but some of them are typed lists, that are brought together from all sorts of sources. One secretary sent a very nasty letter to the Chairman of the Committee saying, I hope you use this information because it sure was difficult getting it. It was obvious from looking at it that most agencies don't have control of their publishing programs. So, as to whether the 102 is the total number produced in the 18 months - I doubt it, but it's a real good indication. It gave us some statistical evidence. So when we have an agency person in now, like I've been dealing with one - a very large offender, who had been telling me lots of stories for four years, how they're going to do this and that. And when I confronted them with their binder like that, they could not ignore the fact that they basically had been lying to us, never dreaming that we would use the data from someone else to prove it. In answer to a question about cooperative cataloging, Ms. Hoduski answered: What I would like to see and what we tried to do and which fell through, is a cooperative cataloging program where certain agencies, particularly those with large publication programs, would agree to meet certain standards and would provide the data to GPO or we'd have this new agency, or cooperating just the way GPO is cooperating with LC, just a sort of fanning out sort of arrangement, and I think all of the federal people who belong to OCLC make this possible. Its really not possible unless you're following the same rules. And just because you're going to have AACR II, you'd better believe it, that's not going to be that much help to you in coming up with a standard product. I think the need for a name authority files, and not just name authority files, series authority files, title authority files, is just crucial. I see this coming along. I see the beginnings of it. In fact, there are apparently five states waiting in line after Texas to cooperate with LC to establish state names, which is vitally needed because I know we all get local publications, state publications with which you don't know what to do, and they're so similar across the country and those who deal with that all the time realize it's not that easy to



establish a name that's going to mean something, and AACR II is not going to make it any easier for you, and therefore you need the authority file. Once we get the implementation of AACR II in 1981, and GPO takes over that cataloging, then I expect them to go out and work out some cooperative arrangements with some other agencies or with other service agencies, possibly. There's no reason why it has to be with a specific library. It might be with NTIS, or Defense Documentation Center, or whatever. You want to really accomplish as much as you try to in a 5-year plan like the Russians, but it doesn't really work out that way. You've got to take it one chunk at a time.

Question from a member of the scientific community with fears about changes in distribution of scientific information. Would you like to allay my fears in any way? Ms. Hoduski: I don't know what you're afraid of. I can't allay them without ---.

Participant: Well, we have from my point of view a successful scientific and technical information distribution system in the Department of Energy Technical Information Center, NASA's Scientific and Technical Information Center, NTIS and DDC. We got most of what we need in a reasonable amount of time. Do any of these agencies fall under what you envision as the empire that will be created from MPA at this time? Do you see any of these 4 agencies falling?

Ms. Hoduski: I would expect that they would all be subject in some way or other so far as agreeing to some kind of minimum bibliographic standards. For example, exchange of data tapes is extremely difficult between those bodies. As to minimum standards, duplication between them is ghastly. You have some agreements, like Technical Information Center and NTIS, DDC and NTIS, NASA and NTIS. Those are agreements that can be built upon. A good example is - Why is it necessary that a DOE document be filmed three times? Why should the taxpayer pay for the production of a master at \$40.00 a piece, 3 times? It doesn't make any sense at all. So, if you're talking about our establishing an agency to eliminate wasting the taxpayer's money, then it is a threat. It's not going to be a threat to your getting information. I would hope that this would increase your access to information, that it would, hopefully when this commission is established and they look at the total picture, they can say, "Here are areas where people can do this job and have the expertise to do it. Let's build on that and let's share that data. I think it's disgusting within the government that we should have a rivalry between our own service agencies. Does it benefit us as individual librarians? Do we really care if these agencies continue to exist? I mean, if I really cared about the JCP continuing to exist (which is going to be abolished), hopefully to improve the future of public access, then I would be fighting to preserve an agency that perhaps should not continue to exist, and perhaps should. It's done some good things, but there may be a better way. I mean, if I worked for NTIS, I would probably want to preserve that. Or, if I worked for GPO. Fortunately, I don't work for any of these service agencies. I've dealt with all of them in the past. I think they've all got very good points. I helped strengthen all of those. I, by myself, sent 4000 documents to NTIS and did all of the data sheets, corrected them, and made sure they were reproducible. I



collected 20,000 for GPO and that was before I ever went to work for EPA, you know, so I think we have to look at the total rights of the public, versus "Are we going to preserve and protect a particular agency because we like it or like the director or like the people there?" I wouldn't see anything wrong with continuing some of these agencies and profiting from their various skills. One agency may have terrific marketing ability. Another has great indexing ability. Why don't you bring these people together? The synergistic result of it I think would be very healthy to the government. So, I think we've got to look at a whole new system. We can't get mired down in protecting our own little empires or friends that run them. I think that everybody that goes into a job has realized that they are expendable, and that they may not be around in four or five years. What is it that's best to serve our users?

Question: I guess I have a question about how much interest the public has in scientific and technical information, certainly in the areas in which my laboratory works. Ms. Hoduski: I think the public has tremendous interest. I've been fortunate in this job that ordinary citizens, and I would consider an accountant or engineer or someone like that or local small city mayor to be ordinary citizens, call and raise holy cain because they couldn't get certain scientific and technical publications available in a local public library. I had one gentleman who is doing practically a Jack Anderson investigation of a particular agency because he and other persons were denied access to a publication that corporations got. There's tremendous interest in the public. We had them volunteer to come in and testify, to give us case histories. So I see a grass-roots pressure represented in environmental groups and Nader-type groups and so on, saying that we want this information and we deserve it.

Question: Do you think the problems are with distribution . . . or is it the system? Ms. Hoduski: No, I think it's probably the system. Because for example, the one gentleman I've been working with went to his local public library who attempted to obtain the publication and was denied.



Diana Proeschel, Library Division,  
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## PUBLIC RELATIONS IN THE 1990s

(PARTICULARLY FOR MILITARY LIBRARIANS)

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Before looking into the crystal ball of the future the definition and need for public relations should be identified. One excellent definition is from PUBLIC RELATIONS NEWS, October 27, 1947, which states "Public relations is the management function which evaluates public attitudes, identifies the policies and procedures of an individual or an organization with the public interest, and plans and executes a program of action to earn public understanding and acceptance."

All too often public relations is the stepchild of librarianship. The term sounds casual, almost frivolous which librarians never are. Its practitioners are scorned as lightweight, nice to have around upon occasion, but a bit much for the long haul. Our preoccupation with new tools such as automation and computerized handling of information while opening vast new resources for library services has caused neglect in many areas from personnel considerations in libraries to public relations. Too often public relations has been function by afterthought. If there was an "artistic" staff member, if there were repeated requests from users, a program or some publicity efforts were tolerated. If practiced at all, the results, all too often were clumsy, poorly executed and thought out, resulting in negative or no public impact. Administrators would go back to their "real" world of librarianship saying "See I told you so . . . that kind of thing will never work here. It is alright for the public libraries. Have you ever thought of children's work?"

These reservations about public relations are unfortunate, especially since there is good reason to believe the development of sensitive and knowledgeable public relations activities can be of legitimate help to an institution seeking a mutuality of interest with other elements in its community.

All public institutions have some form of public relations whether they recognize it or not. The institution's activities are continuously open to public scrutiny, and unless they are understood, respected and appreciated by the community, the effectiveness of the institution can be jeopardized. Libraries as institutions need to respond to the total community as its constituency and make sure the desires and aspirations of the community are included in the library's decision-making process. No library can achieve its goal if it is not conscious of its public function. It will fulfill this mandate if it engages to some degree in responsible and effective public relations activities.

Recently it has become apparent to many librarians that major public relations efforts are essential in the fierce competition for the dollar with decreased budgets and increased costs. Although librarians have few natural enemies neither do we have many natural supporters,



and <sup>1/</sup>"librarians must intensify their efforts to demonstrate to all citizens the 'basic human needs they can help to meet (information, recreation, education) and convince that large body of non-users that libraries can be an important element of their 'survival kit' in an increasingly complex society. This 'awareness training' is, and must continue to be a major public information goal for all kinds of libraries." A varied public relations program, enthusiastically presented on a continuing basis, can go a long way toward getting total support and widespread community interest. If the public is totally aware of the services available in the library, they will use it to its fullest advantage, resulting in positive results for both the public and the library. This kind of public relations is here to stay and grow. Being in tune with society will be a matter of survival since today's users become tomorrow's legislators.

Public relations ranks in importance with other management functions such as production, distribution and finance. More courses and seminars are being taught on public relations across the nation at the decision level. The planned integration into the curriculum of Harvard Business School demonstrates public relation's importance.

Now, what of the future? My crystal ball unfogs and I see public relations in the 1980s as follows:

. . . Public relations will be a management function of equal importance with such traditional operating functions as finance, marketing, research and development, etc. It will have top level attention and authority and will be substantially elevated in its role in the institution. It will be considerably more than an abbreviated reference and the true meaning of its work will be understood by management, volunteers, and staff, furthering internal support. There will be an integrated long term public relation plan in the total management pyramid. Public relations practitioners will be committed to the year-after-next and beyond, finding the future irrevocably proscribed by the present. Public relations will be done in the language of management, using resource allocation, ZBB, MBO, crisis time management and all the latest buzz words. The public relations practitioner will be more of a manager; more a pragmatic counsel to top management; more responsible to and identified with operations. He or she must be equipped to manage the institution's response to change and discern what that response should be . . . balancing the immediate trade-offs without compromising the long term welfare of the institution and the public's that depend on it. The risk for public relations is that it becomes more visible, more vulnerable and more accountable. The reward is to become a more powerful contender in shaping corporate and social history.

. . . Public relations will be more cost-oriented, with a bottom line figure. This way management will know how much they are getting for their public relations dollar. Measurement for effectiveness will be equated with cost, and public relations will be a budgeted line item.

. . . More publicity will be centrally produced. Small libraries, institutions, companies will be able to maintain the same standard of

<sup>1/</sup> Dempsey, Frank J., "Public Relations" ALA YEARBOOK, 1979



excellence as the largest institution. Systems will consolidate their resources for centralized production of publicity items and help in planning total public relations packages. In-house public relations departments will be supplemented by outside firms to offer special expertise which only the largest organizations can afford to maintain on a continuing basis.

. . . Publicity will be slicker, and more professional. Visual communication will be immeasurably advanced by 3D photography, improved color film, high speed cameras, and instantaneous development and printing. These and other technological advances will result in more polished visuals. Electronic science will advance public relations to an extent unrealized today.

. . . There will be better education for public relations as the scope has expanded from being only a set of skills. New highly academic programs will include sophisticated behavioral science applications which will add to the practice of public relations and in-depth management skills. Public relations teaching in universities will emphasize social science research. Psychologists, psychological testing, and perception surveys will be used increasingly to know and learn what are our problems and how we can overcome them. Research will become an essential rather than occasional management tool and will be used effectively and resourcefully in supporting public relations concerns and recommendations. There will also be more sharing of that research to build a viable fund of knowledge. This will end the tendency to feel public relations activities are the sum total of individually worked out experiences. Librarians' higher expectations for their professional education will result in more courses and seminars being offered in library schools in the future.

. . . With the emphasis on measurement and evaluation, skill in these techniques will be high on the priority list of public relations specialists in the future. These techniques will be in a form whose results will retain professional validity, yet be relevant to management. This is necessary if tomorrow's practice is to escape its label of "fuzziness" and "softness" in the operational area, and become effective and respected in the real world of management.

. . . There will be more training in planning and editing for the spoken word, as the speaking platform, radio, television, film, CCTV, audio and video tapes and discs, will become the commanding media for communications. There will be more structuring for the face-to-face group encounter and the public relations practitioner will assert an initiative in programming for such dialogue.

. . . Within military libraries there will be more use of Public Affairs Officers. This is an idea whose time has come and passed, as on most military installations, they are the only professionals. Their expertise will be used more and more to assist libraries in developing well rounded programs. Factors causing this will be increased funding struggles, and the expansion of networks and consortia which make it essential to have effective communication programs.

How do we as military librarians get a headstart on the 1980s? Learn the language of management (buzz words, formats, learn how to write, etc.). Be able to show how cuts will deter service. Show the impact if resources become more constrained. Quantify possible benefits of your programs (enhancing mental development, social responsibilities on the Commander's part, etc.). Show what bad effect will result if there is no support. Continually evaluate your programs and pass on feedback to management. Have checkpoints as the program goes along; do not wait until it is completed. Do a survey to find out how well you are doing. Assess the commander's needs. Find the Service's goals, goals for your division, your directorate. If you do this then develop a plan to support those goals. If you don't know the goals, find out what they are or initiate goals for yourself and send up through the chain of command.

Public relations takes patience, persistence and tenacity. It is also an occupation where you never stop learning. You have the resources and talent to dream up and carry out ideas that are appealing to the community. The truth about libraries is a good story. You tell that story and have fun in the telling.

"In a changing world where the action of business, religion, education, government and other sectors of the American system is being judged, before the bar of public opinion, public relations is essential, its role assured and its future bright." 2/

2/ Griswold, Deny, editor publisher of PUBLIC RELATIONS NEWS.



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## LIBRARY MANAGEMENT IN THE 1990s

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Permit me to state the obvious, that by the time we get to the 1990s many things will have changed. There is no reason to expect that technological advances will not continue to have been made. Some of the issues that Library and Information Managers will have faced in or by the 1990s are: evolving work patterns such as flexitime, four day work weeks, shorter work weeks, part-time staffs. The library as a service or support group will face a greater challenge implementing these new work patterns than managers in the research and development areas of the organization. This is due to the independent nature of many R&D assignments that allow scientists and engineers to make their own work schedules. Other issues to be faced include electronic mail, the teleconferencing, more use of word processors, minicomputers, and offices of the future with their open space landscape.

Another important issue to be faced by managers in the 1990's is the paperless (or at least less-paper office). Paper is going to be replaced by electronic and microfiche systems. Correspondence, reports, documents are going to be drafted, revised, edited, reviewed, prepared and final copies made via Cathode Ray Tubes (CRT). Eventually all work stations will be linked via computer. A typical example of this type of technology might be as follows. The previous day's mail will be on our CRT in the morning when we arrive at work. As we begin to work our way through it, we notate that information we wish to retain. We will mark it for filing and it will be automatically indexed. That correspondence we wish to answer can be done on the spot or coded for later recall. That which is of only peripheral interest we will read and erase.

One final issue on the horizon to be faced by managers is the arrival of information systems provided from outside the library environment. I am talking in particular about such efforts as Viewdata (Prestel) in the United Kingdom. This technology has now been expanded to include experiments in the United States. Ordinary phone lines are used to link a central computer to your TV set, through which, at home or in the office, an individual can access the latest news, weather, games, health care information, government services, directories, etc. It is not a difficult step from linking a TV to one central computer to linking a TV to any computer, which in turn, could allow a scientist or engineer to tie into a multitude of information data bases.

Visualize the following scenario. The date is 4 October 1992. I get up at 6:00 AM in order to review some work before I catch a mid-day flight to attend a conference in another city. By 7:00 AM, I begin working. I dial an appropriate number and quickly my TV is hooked up with the computer at work. I enter a command and ask to review the mail I received yesterday at work. I quickly scan the correspondence, making decisions as to what to discard and what to file. I prepare a reply for one piece of correspondence requiring immediate attention. I transmit all this information back to the central computer with an



appropriate flag so that the reply will be forwarded immediately. It is now 7:30 AM and I decide I have time to conduct a search or two. I press a key and call up Energy Abstracts on the TV screen, I formulate a search. I read some abstracts. I determine there are three articles I would like to read in their entirety. I insert a command and automatically these are ordered for me. It is about time to head for the airport so I sign off and am on my way. The perplexing issue for librarians in this scenario can be summed up in the following question. Where does the library fit into the picture? "Nowhere" may be the disquieting answer.

To suggest we are not now at, nor on, the threshold of this type of technology and its attendant implications for library and information managers belies reality. As evidence that our profession is at the forefront of current technological developments, let me list a sampling of events. On 17 September 1979, the NBC Nightly News Special Segment was devoted to home information systems. It explained how these systems were carried over ordinary phone lines and viewed on a TV set. They talked about Viewdata and how it is working in Great Britain and some US experiments along the same lines. The same night you could have turned to the CBS Evening News and seen a commercial for WANG Word processing equipment extolling the virtues of the speed with which WANG WP handled information. Finally, the same evening, "Lou Grant", a TV show about a Los Angeles newspaper, had the "reporters" preparing their news copy on a CRT while the "editor" was reviewing this same material on his CRT.

A news broadcast, a commercial and a TV show all happening the same evening displaying information being used in a dynamic form. Let me read to you a short piece that appeared in the literature recently.

Information: there's a growing agreement that it's the name of the age we live in. We have entered a post-industrial stage of development in which the ability to put information to use becomes critical, not only to the essential production of goods, but to efforts to provide a better life for the individual as well. Changes in our perception of information itself--its nature as well as its scope--have accompanied the profound shift of emphasis in our society. At the same time as the volume of information has been increasing dramatically, our understanding of the meaning of the term "information" itself has also broadened--to encompass as wide variety of timely data relating to "how things really are" across the whole spectrum of human activity. One reason that information has proved to be such a dynamic resource is the fact that there exists today a remarkable technological capacity for dealing with it rapidly and effectively. Business is changing the way it does business. Technology is finally finding its way into the office. As the cost of doing work with computers continues to decline, more information will be processed by computers, and more people will be using them. Information that has commercial value must be protected like any other asset. Minimizing delays is only one of the ways in which modern technology can be used to benefit the consumer. Information management is not a way of side-stepping hard work. It is a way of making it more productive. Information management systems are actually the epitome of the work ethic.<sup>1</sup> If this all sounds vaguely familiar, it is because every word was borrowed from



a number of advertisements sponsored by IBM and Xerox over the past year or two. When newscasts, TV shows, and advertisements all take such a deep interest in our profession, it is high time we, too, utilize every bit of the know how in our profession to the advantage of our organizations. The period of the 1990s will pose tremendous challenges to a manager's abilities to handle information. A measure of the manager's abilities will be how effectively he/she deals with this responsibility.

I started off by saying "permit me to state the obvious", that is, there will be change. I plan to talk a little later regarding what managers in the 1990's will have to do in order to cope with this change. However, let me also state the sometimes not so obvious--much will not have changed. I think it will be as important for managers in the 1990s to know how to deal with that which will not have changed as to deal with that which will have changed. Come what may in technological developments and advancements, the basic principles of information transfer (which is what we librarians do) will remain the same. Why? Because for the present and foreseeable future, there are just seven basic elements of human communication: speech, hearing, writing, reading, perception (becoming aware of messages by hearing or reading it), cognition (relating the message to things we know) and reaction (doing something about or with the message). New developments may amplify, accelerate or otherwise facilitate one or more of these processes but they will not replace them.<sup>2</sup>

The one important aspect of management that will not change significantly in the 1990s is the interaction of managers with their staffs. The critical element in this equation which will have a much greater impact on a manager's effectiveness will be the proper utilization or gross underutilization of the personnel resources in his or her organization. Developments will be occurring at greater speeds and demands for information will have shorter lead times. There will be less margin for error in the future. Planning will be more necessary and more long range. Budgets will be tighter, competition for clientele will be greater.

The users and the parent organization itself will be expecting more from the library. The staff will be given greater responsibility and be looking for more fulfillment in their jobs and greater participation and the feeling of being part of a team.

D. Dean Willard, Director of the Library Science Program at Indiana University pointed out several years ago seven major organizational problems that any library administrator must realize exist.<sup>3</sup> These seven problems must be faced squarely by any manager who hopes to be effective. Failure to deal with these problems will negate and counterbalance any efforts aimed at increasing organizational effectiveness. All the problems deal with manager-staff interactions. Let me go over them briefly.

The first of these organization problems is FEAR. It stands head and shoulders above all the rest. It is fear to point out a superior's mistakes, fear to offer suggestions lest they be taken as criticism, fear to propose new ideas or programs. What happens when fear sets



in? Fearful people seek to defend themselves. They avoid situations which may promote fear. They set up defenses. What does the manager "gain" from an atmosphere of fear? Secrets are kept in order to avoid reprimands. Creativity is stifled. Advice is withheld. Initiative is avoided.

These are some of the passive benefits of fear. Some of the active benefits of fear include: employees creating or joining cliques, gossip is started to focus attention away from the source of the problem, responsibility is avoided. Many managers feel that by providing employees jobs and by paying salaries they are obtaining loyalty, undying affection, and long suffering in return. However, what they should be buying -- advice, initiative, creativity, and responsibility -- is killed by an atmosphere of fear.

The next organizational problem is closely related to the first. It is the NEED TO ASSESS BLAME. When a problem develops, somewhere along the line. Someone wants to know "whose fault was it?" This affixing of blame is partially due to our legalistic heritage. We feel the need to accuse, try, and convict any wrongdoer as the only means to prevent a reoccurrence of the problem. However, in fact, any problem is probably attributable to a number of causes -- lack of responsibility, lack of proper training, to name only two -- not just the individual. The legalistic approach also focuses attention on the past. (What happened? Who did it? When?) Instead, managers should adopt the scientific method to problem solving. This seeks to determine causes, suggest solutions, and accept the most promising course of action. Notice, the scientific method does not indicate that all responsibility should be avoided, but the emphasis on responsibility should not be to affix blame but rather to solve problems.

Another major problem is the sometimes unconscious COMPARISON BETWEEN the library as a SERVICE organization and a PRODUCTION oriented organization. I think libraries have borrowed too much philosophy from production organizations in that they rely too much on numbers in order to measure progress. This is why there is such emphasis on the number of journal subscriptions, holdings, book counts, etc. Nobody is immune from this attitude but it should be seen in its proper perspective. Statistical counts should be nothing more than a general guide, a frame of reference. A service organization should be effective but not necessarily efficient. Our end result should be measured by how effectively we provide the user with what he wants, not how many books we cataloged last month. In support of a less statistical approach, I think the profession needs to give some additional thought to measuring user satisfaction and have this replace or at least augment number counts as the only means of justifying libraries existence.

One of the greatest follies any manager can perpetuate is operation by reason of ADMINISTRATIVE EXPEDIENCY. In this type of situation, the manager puts his own serenity and personal working comfort before that of the employees and the goals of the organization. Deliver me from a manager who would rather save himself or herself a little trouble than defend their employees. The tendency of a manager to view his or her relationship with the staff as only so many one-to-one



relationships, ignores his/her relationship to the staff as a whole. Each concept must be acknowledged and seen in its relationship to the other. When a problem exists with one employee, the manager has a tendency to view the problem only in the context of that employee. In doing so, he/she may choose to ignore the problem and put off a solution because it only involves one individual. However, if one individual does not do his/her job, that affects the other staff members who must pick up the slack or whose own jobs are affected because the neglected duty is one in a series of steps. Therefore, by viewing the problem myopically and picking the expedient option, the manager ignores how the rest of the staff is affected.

A choice gambit in administrative expediency is to deal with a problem employee by kicking him or her upstairs. How more effectively can a manager tell the rest of the staff how he or she will deal with poor job performance. Of course, the opposite of this type of action is promotion by virtue of favoritism. It draws the same rewards for a manager. But promotion is not necessarily the only way to convince the staff that favoritism exists. The manager need only to protect and/or confide in favorite individuals without consideration of merit.

One other example of administrative expediency is to cheat the deserving employee(s) in such matters as awards and pay raises. If a manager chooses to reward everybody instead of singling out the deserving staff member(s), how better can he kill incentive and a feeling of fair play? Applying an action across the board is always much easier than having to make a decision.

ADMINISTRATION BY CRISIS is the next major problem faced by managers. Whereas, administrative expediency creates frustration, administration by crisis creates tension and stress. This problem is highlighted by a lack of planning and allowing events to dictate policy. This management philosophy is best typified by the manager who drops everything and has the staff to do likewise when any request, no matter how mundane, is received from someone further up the hierarchy. Another factor that can trigger a crisis is having an employee question the manager's action. Everything stops while the manager prepares a defense. How can crises be avoided or at least softened? Planning! One of a manager's jobs is to plan for as many situations as possible. The fact that all problems cannot be foreseen should not be used as an excuse for not planning. If the manager communicates frequently with the staff, many surprise situations can be prevented as compared to the manager who does not tell his or her staff anything in advance. It is the poor manager who keeps subelements of the organization in the dark about what each other are doing. Area A knowing what Area B is doing not only promotes harmonization but alleviates the possibility of Area A finding out too late what plans Area B has that will affect Area A.

The sixth organization problem is EXCESSIVE HIERARCHY AND BUREAUCRACY. Imposing, successive layers of supervision is one method for managers to isolate themselves from the staff yet, the manager requires any problem to travel, from where it originates and where the people are that know the most about the problem, through successive levels of hierarchy until it reaches the manager. As bad as this is, it could be deemed acceptable if the staff member who knows most about the



problem travels along with it. However, too often he or she does not. Too often, the manager, who is the only one who sees "the big picture", makes the decision regarding the problem with little or no input from those best suited to solve it.

The last problem is ADMINISTRATION BY PLATITUDE. Here, the manager feigns interest in the staff members by inquiring about the employees health, family, etc. When this is done spasmodically and at opportune times, the lack of sincerity is not lost on the employee. The "open door policy" professed by many managers is another often repeated managerial platitude. The implication is that the manager is always ready and willing to listen to any problem a staff member has. This is not only misleading but bad policy as well. There needs to be clear cut routes to take employees' problems--one that will insure the employee is duly heard. The open door policy is usually not the route.

If a manager can avoid these problems, he can at least establish a working relationship with the staff. This is critical in achieving maximum organizational effectiveness. The period of the 1990s, with more information to handle, with newer, more sophisticated technology with which to handle it, with more competition from outside the library to supply this information, will require the library manager to utilize the full capabilities of the staff. If a manager mishandles these personnel resources, the goal of the library to provide information to the user is hardly obtainable.

Earlier, I talked about some of the future options available to the information user and intimated that by the 1990s the user could easily do what the library is doing for the user today. How then will the library of the 1990s fit into this framework? What will the library/information manager have to concern him/herself? I think we all can envision a future where some document delivery can be affected without librarians. However, when one considers the tremendous amount of data available and the information explosion, there is little chance that an individual scientist or engineer can review all he or she needs to review and select the "right" documents. This is where the library must become involved. The volume of data must be reduced to a manageable size and at the same time pertinent data must not be eliminated. This reduction and massaging of data is going to be within the library's purview in the 1990s.

Today librarians are purveyors of documents rather than information. In the 1990s, the information manager of specialized technical libraries will be faced with a different challenge. Document delivery must be replaced by information delivery. The library's prime purpose will shift from merely delivering to the user a book, a journal article, a report or even a list of bibliographic references from a uniquely tailored search. Instead, the library's purpose will be to deliver information. Its task will be to have sifted through a collection of data and narrowed the amount of data made available to the scientist or engineer. Why must libraries get into information delivery? No one has to expand on the topic of the exponential growth of information. The volume of data increases drastically and in perceptual amounts. As a by-product, the users are faced with an inability to sift through this avalanche of data in order to gather, read and assimilate what



they need.

The idea of information delivery is not something that is beyond the scope of libraries. Why should librarians be nothing more than technically trained shipping clerks who must simply find and deliver the goods (documents)? Are not librarians professionals who are concerned with the total information spectrum--the production, storage, dissemination, use and consequences of receiving the information? In a certain sense, we librarians like to think we already supply information and not simply documents. After all, has not the latest and most dynamic developments in the library world been in data-base manipulation and don't we call this information retrieval? However, upon close examination, with particular attention to semantics, we realize that we have not been dealing in information retrieval but rather bibliographic retrieval and there is a difference. This is not meant to minimize bibliographic retrieval because we have made tremendous efforts in these areas and in it we have the underpinnings of true information retrieval. Yet, it still remains bibliographic retrieval.

Currently, one of the most obvious leaders in the area of information delivery has been the Information Analysis Centers (IAC). However, simply trying to change the operation of a library into that of an IAC is not the answer for two reasons. One, most IACs work in extremely narrow fields (ex. plastics, non-destructive testing, infrared) much too narrow for even specialized technical libraries. Libraries are going to have to operate in a broader spectrum of information than an IAC simply because their users have broader needs. It is questionable whether an IAC could provide the same level of service that they now provide if they had to expand to a broader spectrum. Second, libraries should not strive to provide the technical levels of expertise that IACs provide. This would be beyond the scope and abilities of libraries. The levels of expertise found in IACs should remain unique to those centers.

If libraries are not simply going to provide document delivery and if libraries are not going to be like an IAC, what then? What do we mean by information delivery? Information delivery in its most general sense to me implies a "narrowing" or "whittling down" of a broad area or large quantity of data so that the user can accept and read only that information which is pertinent to his/her current needs, and most critically, in amounts that the user can assimilate. I think today a library would be appropriately satisfied with its results if it had taken a request from a scientist, selected an appropriate data base, formulated a search strategy and produced a list of one hundred references, some pertinent, some not. The user would then review the results of the search and possibly request some of the references. It is of no value to supply one hundred references, some of which are valuable and others of no value, when a user cannot or will not use them. If there is too much "noise" in the results provided, the user will simply abandon the results not wishing to look for the needle in the haystack. It will be the library professional's job to sift through the one hundred references and reduce the number of references so that the user has only a manageable number with which to work.

One of the problems some libraries are beginning to deal with in



utilizing the automated data bases is the lack of specificity in descriptors and index terms of those data bases. The data are made to appeal to large number of users with varying needs and the specificity required for terms and concepts unique to technical libraries is sometimes missing. What this means is that searches we prepare are one or two levels removed from what we and the user actually want. Naturally, this causes extraneous material to be brought into the search. Too often it is left for the user to separate the relevant and irrelevant. This reduces the library's effectiveness to the user. If the user must spend his or her time locating, only five useful references out of one hundred that are supplied, the user may well feel his or her efforts could be better rewarded by they themselves seeking two or three references on their own versus spending the time to comb through the one hundred references supplied by the library.

Information delivery, in the specific sense, means supplying hard factual information in an immediately usable format in response to a user's need. It most likely will require the staff member to gather, manipulate, massage, and assimilate the information him/herself. Some of the work the staff member will be doing is what was typically done by the scientist ten to fifteen years before. The information supplied must be correct and timely. This implies that the staff member knows beforehand what the user is talking about and does not try to go out and learn this after the request is received. It will require that the staff member have some specific knowledge, background, or training in the user's area of interest.

How is the information manager to accomplish all this? In the general sense of information delivery, that is, the process of narrowing down the volume of data that the user will eventually receive without discarding relevant material, I envision the service being provided by librarians who have technical background or who are technically trained. To provide this type of service, a manager of a specialized technical library will have to recruit and cultivate new librarians with backgrounds in the physical or hard sciences and also provide training for current librarians on the staff in these technical fields. The more specific type of information delivery may be beyond the capabilities of all but a few librarians. (Those who have the ability should be encouraged to use it). However, it is within the scope of the Technical Information Specialists. (The 1412 personnel series in the Federal Government). The manager of a library may opt for this type of staff member to provide for specific information needs. Another prime reservoir of talent would be for the parent organization to provide technical internships to the library from the scientific community. In this manner, chemists, structural engineers, metallurgists, etc. would spend time on the library staff on a rotating basis. This would give the library a pool of talent to draw upon and also increase the awareness of the scientific staff to the information profession by giving them first hand working knowledge of it.

An element for a manager to consider along with staff training in new areas, recruitment of new skills, and scientific internships is the maintaining level of professional competence of his/her staff. I feel training has largely been looked upon as an option. I think we will see over the next decade that training will be used more as a require-



ment to maintain the skills necessary to stay abreast of the latest developments in the information field.

Technical orientations that many organizations now offer to new scientists and engineers upon entering the organization should be attended by librarians. Local training and courses at local colleges are all avenues that managers will have to pursue in seeing that their staff is prepared. Attendance at local technical symposia, meetings, conferences, and reviews will give librarians direct knowledge of what the organization is doing. This is the first step in providing a backdrop against which to work.

Maintaining professional competence in light of the rapid increase of knowledge has long been considered important by business, industry, government, academic and professional associations. Licensing and certification as one means of establishing professional competence has been on the rise and is expected to increase in the future. Continuing education has long been regarded as a major component in assuring competence.<sup>4</sup>

Teaching and engineering are two professions where continuing education has played an important role for many years. In each of these professions, after the resident education is completed, certain additional requirements must be met for permanent certification. Teachers must earn a specified number of post baccalaureate credits to obtain a permanent teaching certificate. Engineers must pass state examinations in the practical phase of their branch. Since this credentializing takes place after several years of practical experience, continuing education has played an important role in preparing engineers for this examination.

Insurance salespersons and real estate brokers although having no resident education, use continuing education to prepare to meet legal credential requirements. Some professional groups now require continuing education as a condition for maintaining membership. In some cases, this is to forestall a legal mandate, in other cases to support it.

The effectiveness of a library will greatly depend on the abilities of its staff. The amount of knowledge and expertise required to work in the information field will continue to grow also. A library manager will have to concern him/herself with maintaining a sufficient level of expertise.

I see two major hurdles to be overcome in order for a manager to be effective in the 1990s. First, the information profession must attain mastery over the man-machine interface. We have now what some have called an "applications gap". That is, our knowledge of how to make machines operate faster, more efficiently while taking up less space, has far surpassed our knowledge of how to utilize them to achieve our goals of providing information to the user.

Second, although this era has been labeled the Information Age, the information profession has had a tendency to sit back and be relegated to second class citizenship. Even within the Department of Defense



(DoD), there is a lack of attention to Scientific and Technical Information (STI) programs.<sup>5</sup> During the sixties, DoD provided the early leadership in the STI movement in federal government. Since that time the leadership exhibited by DoD has diminished to where now DoD STI programs reflect this diminished interest. All too often, the DoD information community is the first in line for reorganizations, reductions in force, funding reallocations, turnover of supervisory personnel. All this, coupled with the relatively inferior status of information managers who, all too often find, themselves working for supervisors outside the R&D management, untutored in technical information matters, does not enhance our position.

Information managers need to constantly remind their organizations of the importance of information. They need to convince Chief Scientists and R&D Managers to improve the supervision of STI programs and to find ways to bring information managers into the planning process of, not only STI program, but other R&D programs. The information manager must show that his or her expertise can contribute to the success of the organization's missions.

Finally, let me read a quote from Saul Herner of Herner and Company, Washington, D.C. which sums up much of what I have been saying.

"There is a long-standing tendency in library and information science to confuse the means and ends. The mere delivery of a book, paper, report, or notice of its existence is by no means the end of the information communication process. In many instances, it is the beginning of the process. The sooner we recognize this, the sooner we will escape from the "black box" that seems to intrigue, to intimidate, and to confuse too many of us, and the sooner we will realize what we are doing and why we are doing it. Only when we learn (or recall) first principles and how to apply them can we design truly effective and responsive information programs and systems".<sup>6</sup>

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## MANAGING LIBRARIES IN THE 1990s - A MANAGER'S VIEW

Barbara Collier  
St. Louis Army Engineer District

Once upon a time, in the not so distant past, a fresh young thing filled with smiles and enthusiasm approached the head cataloger in the local library and mentioned, somewhat carefully, that there was a new machine in the Director's office that might take the place of handwritten catalog cards. The cataloger, being of sound mind, enviable talent, and enormous professionalism, gently reminded the sweet young thing that, while machines had their place with clerks and secretaries, anything as loud and unartistic as a typewriter had no function in the learned halls of a library. How far we've come in a very short time -- or have we! While handwritten cards are hard to find, catalog cards are still prevalent throughout the library world. Libraries share their knowledge and resources through the mail but facsimile transmission is still a novelty. OCLC rolls off tongues with ease, but COM brings blank looks and mumbling. How does an organization dedicated to acquiring, classifying, controlling, and preserving printed matter fit into the paperless world of the future?

As a manager, I am concerned with the operation of all types of offices and facilities. A basic vocabulary of terms such as budget, floor space, staffing, cost effectiveness, and quality control is used daily. In the past few years, those terms have been joined by word processing, COM, micrographics, automated retrieval, voice input, optical character recognition, telecommunications, data base, magnetic tape, floppy disks, mini- and micro-computers, CRTs, application software, electronic mail, communication interfaces, information storage, satellite communications, etc. The new terminology has not diminished the need for the basic words. More than ever before managers are concerned with accomplishing more with fewer resources. How do you justify stuffing engineers, geologists, and the like into inadequate office space while the librarian is expanding that facility to accommodate back issues of journals and seldom-used reference tools? Floor space is expensive and scarce, fancy equipment requires special training and maintenance, non-paper media must be stored and handled properly, and operations must be continually analyzed and evaluated. Can you fit your library program of the future into the monetary and staffing constraints governing my world?

Speaking strictly as a member of top management, I want my library staff to give service without requesting from me more personnel, money, equipment, and materials. The service given should satisfy most users; I can evaluate that by the number of complaints I receive. Few complaints means the library is okay, an occasional laudatory comment means the librarian is above average and worth keeping around, and anything beyond that alerts me to take a closer look - perhaps I can cut a space or save some floor space, money, etc. What I don't want is a library loaded with specialized, incompatible equipment that must be operated by high-graded employees. Dedicated terminals that can only access one data base take up room and cost money. Unless such equipment is needed to support a workload on a full time



basis, a minimum of 6 hours daily, we cannot afford such luxury. Come to me with a request for one multi-use terminal which will improve quality and quantity of overall service and I'll listen. Don't approach me with a request for microfilm equipment unless handling COM is included in the capabilities. You can argue the advantages of roll film forever, but my world is heading for microfiche - computer output microfiche. Don't come to me expounding on the benefits of a mini-computer unless you have already explored all of the in-house capabilities available. Many word processing central processing units are, in fact, mini-computers which are totally programmable. Good office managers are building integrated products around micro-processors or general purpose mini-computers. Libraries must strive to fit into that world. Use the technology surrounding your facility before adding equipment unique in application.

Along those lines, it seems that libraries can no longer be all things to all people. The information explosion has made that impossible. More importantly, technology has allowed you to work around the problem. Through electronic devices you can easily access information anywhere in the country. Hence, the time for specialization is arriving. Logical networks can be established throughout an organization with specific libraries being assigned special subjects. Complete and total centers of competence can be developed in each area and shared as needed throughout the network. Specialized collections result in easier procurement and classifying because the span of knowledge is lessened. When dealing with the same companies for like materials, technical processing becomes repetitive and efficient.

If this is beginning to sound like a chapter out of Future Shock, I hope you can find comfort in knowing that I truly don't look for a library collection of ultra-fiche and terminals in the 1990s. In spite of my "top management" concern, the librarian in me knows that our users are not any more ready for that than we are. The truth is, I do expect my library staff to be completely aware of what is happening throughout the organization. If they have to close the library doors in order to visit their users at work, then they are to do so. The ultimate in good service is knowing the needs for those being served. An active current awareness program is worth a dozen terminals. Tell users what is available and how you and they can access the information. Know what they need to know. Find inconspicuous ways of helping people learn how to use various information tools. Develop self-contained training programs on VTR or multi-image equipment. Duplicate and handout microfiche reports, circulate materials when requested, charge out equipment, stop routing journals and establish current awareness program, make things known and accessible. Tell people what you have, what you can obtain, and how you can help them. Acquire a high-caliber, knowledgeable staff and provide good, quick, reliable reference services. Make your program live and vibrate and then improve it via the technology already available to you somewhere in the organization. Throw tradition to the wind and concentrate on doing more with less for users who are also being asked to do more with less. Overcome your parochial attitudes and think in terms of the overall organization and I think you will discover technological improvements already available to you. The future is one of systems, networks, and the like - it must all be compatible and useful to everyone. We cannot afford redundancy and total uniqueness.



## TASK GROUP 5

### STEADY STATE (NO GROWTH) LIBRARIES IN THE 1990s

Discussion Leader: John Cummings, Naval Academy, Annapolis, MD.

This group will explore techniques available to identify technical reports, books and periodicals which are not supporting a library's mission and which can be withdrawn without reducing the library's effectiveness.

\* \* \* \* \*

#### Wednesday, 3 October

1050-1200 - Session 1

\* Organization of Program and Goals of Task Group  
Professor John Cummings, Naval Academy Library

1330-1500 - Session 2

Speaker - Wilda Newman, Gibson Library, Applied Physics  
Laboratory, Johns Hopkins University

#### Thursday, 4 October

0920-1130 - Session 3

Speaker - Carol Johnson, Resource Development Division,  
National Agricultural Library

1330-1515

Speaker - Colonel Richard Trueswell, USAFR, School of  
Engineering, University of Massachusetts (Editor of  
"Collection Management")

#### Friday, 5 October

0950-1200 - General Session

\* Task Group Summary - John Cummings

\*Paper not available at time of publication.



Task Group Leader, John Cummings, Naval Academy, Annapolis, Maryland  
Speaker, Richard Trueswell, USAFR, School of Engineering, University  
of Massachusetts



## MANAGING A REPORT COLLECTION FOR ZERO GROWTH

Wilda B. Newman

Gibson Library

Applied Physics Laboratory, Johns Hopkins University

In preparing for this presentation and workshop on "zero growth," I reviewed my Library's monthly and annual reports from 1960 to the present. To my satisfaction but not to my surprise, I found, as I went along, that the reports got better: more meaningful, more thorough, and more factual. The earlier reports told what visitors had passed through during the month, how many books, journals and reports had been received, and which employees had come and gone. Less thorough and factual reporting was done on budgeting, use of the collection, the ordering activity, and the cost of services provided.

This observation is less a criticism than a comment on the times. Two decades ago, at least in the defense and aerospace communities, money was relatively plentiful. The library budget was set annually, but neither was it prepared in consultation with the supervisory staff, nor did it receive the extensive and thorough staff review in the course of the year that it does now. With a budget based on a liberal interpretation of expected need, one could operate a good library, offer customary services, include an occasional special service such as an in-house translations section, and even incur an extraordinary expense for extra equipment or a special reference tool from time to time without difficulty.

Now, however, we must be constantly mindful of our budget; we must select, not just collect; we must tailor collections to the changing needs of our users; we must thoroughly justify every extraordinary expense; in short, we must manage the library. One principal reason for those changes is INFLATION, which has not only increased the cost of everything we buy but has also forced business, industry, and government to use more stringent fiscal controls. I believe that a related reason is the increased demand for information.

Inflation is not just a passing fad, but is a fact of daily life. Our dollars won't stretch as far as they used to, yet we must continue to meet our user's demands for information. Confronted with this challenge, we need not panic; rather we must view these days as a time of opportunity, as a time to develop techniques of creative management, as a time to develop libraries that are tailored to the needs of our organizations. For many of us, to meet this challenge with our limited resources means "zero growth."

How can a library, which the dictionary defines as "a place in which books (and other materials) are kept for use" even think in terms of zero growth, much less practice it? Well, bear in mind the dictionary's definition of a librarian as "a specialist in the . . . management of a library." The key words in these definitions are use and management. The proper function of a librarian is not simply to sit quietly watching the Library's collection grow, but to manage and direct the growth of those collections to achieve maximum use of the materials they contain. To do that, the librarian must have some way to measure use.



How does even the best manager/librarian determine usage? Most librarians have a clever bag of tricks for that purpose (although those tricks may simply be tricks on themselves). We can look for dates received, staple holes, multiple date stamps for circulation, and even check to see how tattered the issues are, to assist us in the never-ending puzzle of what to keep and what to destroy.

Use can be determined directly, however, and in this paper I want to tell you, specifically in the area of technical reports, about the techniques that one special library has developed to help support staff intuition and the staple-hole count.

### The R. E. Gibson Library

But first, let me give you a brief overview of that library, The R.E. Gibson Library of The Johns Hopkins University's Applied Physics Laboratory. The Laboratory employs about 2500 people, of whom about half are scientists and engineers, the Library's primary users. The Library's collection includes material in the physical and engineering sciences, particularly physics, mathematics, and geophysics; the computing and environmental sciences; and aeronautical, mechanical, electrical, and biomedical engineering. (As you can see, our task is made more difficult by the diversity of our user's needs, and those needs change as assignments, projects, and contracts change.) The Library subscribes to some 800 journals and processes an equal number for indefinite loan, or office subscriptions. About 4,000 books are added to the circulating collection annually and of those, about half are loaned to staff for an indefinite period of time. In addition, 8,000 reports are received annually, and about one thousand of those arrive as "automatic distribution" items. Since the R. E. Gibson Library has no room for growth, the story of how we manage to receive so much material, process and maintain it without bursting at the seams will perhaps be helpful for anyone who is interested in techniques for achieving a zero-growth library.

You will note that we are continually receiving new books and journals as well as reports (which are the primary focus of this article). Our goal is to weed out of our book collection as many books as we receive. As for journals, the Library Collection Committee monitors journal use closely, makes repeated surveys, and displays and evaluates sample issues before entering a subscription, to make sure we are subscribing to only the most needed journals. The methodology and results of studies of our journal collection are discussed more fully in an article I co-authored with Michlean Amir, entitled "Unlimited Demands-Limited Funds." The article was published in Library Journal Special Report #11, Collection Management, Bowker, 1979. It was also published in the quarterly journal Collection Management, Spring, 1979.

### Coping but not Planning

Identifying users and uses of books and journals seems like child's play compared with attempting to cope with the 8,000 government reports that we receive annually. For many years the library staff struggled valiantly with this influx of reports. In connection with that effort they used microfiche; selected, evaluated, and discarded documents.



They looked for more space to store reports, more efficient shelving, and studied report requests, while report costs increased.

New input forms were designed as more computer terminals were procured to produce announcements of incoming reports for the Bulletin. At about the same time studies by General Dynamics showed that storage costs were \$7.25 for secret documents and \$2.33 for confidential ones. More studies were done, this time of reports received on automatic distribution.

Certainly, it doesn't sound as if anyone was considering zero growth. Instead, they were busy trying to keep their heads above water and still provide library services to a sophisticated group of users.

What is it that causes such madness? And, what possesses presumably intelligent human beings to wade, sometimes knowingly, into and, yes, through the quagmire of government documents?

Perhaps it's the challenge. There certainly is one. The challenge of developing an organized, systematic, and cost-effective system of handling the report literature, and at the same time meeting user requirements.

### Basic Principles

Let us start to address that challenge by reflecting on the Five Laws of Library Science enunciated by the eminent S. R. Ranganathan; but let us substitute the word "report" for the word "book."

1. Reports are for use.
2. Every reader his report.
3. Every report its reader.
4. Save the time of the reader.
5. A library is a growing organism.

I want to focus for a moment on that last law. What does "growing organism" really mean? Growing is defined as "to spring up and develop to maturity," and an organism is "a complex structure of interdependent and subordinate elements whose relations and properties are largely determined by their function in the whole." I would suggest that, in many libraries, report collections have sprung up and now have grown into that gawky adolescence in which they just sit around taking up space, but that the cognizant librarians have not yet taken them firmly in hand to help them develop to maturity. Nor, I dare say, can most of us state that reports in our collections play an appropriate role as a part of a growing organism.

### Data Collection

The first step in trying to bring a degree of maturity to report collections involves finding out certain basic facts about those collections. The facts we need to know are: How many reports are there? Where do they come from? How much do they cost? Or, more specifically, the answers to these questions: (How many can you answer for your library?)

How many reports do you receive each year?

How many are the result of an order?

What source organizations do your reports come from?

-DDC

-NTIS

-ERIC

-ERDA

-Corporate Source (that is, some business, industry, or government agency)

-Other

What costs are incurred annually for each source?

How many reports do you receive on automatic distribution?

-How many are the result of a request from within your organization that you know about?

-How many are sent spontaneously by the originator?

-Of these, how many are of interest to someone in your organization?

You can collect such information for your decision making in a systematic manner without over-burdening the staff. The initial "set-up" phase for such a collection system does require time, but that time is well spent; it is time that you will be repaid over and over again.

Some seven years ago my Library pulled all its acquisitioning activity together into one central location under a single Acquisitions Supervisor. A byproduct of that centralization was the creation of a monthly report on acquisitioning activity and material costs. (Quarterly reports and annual reports are also produced.) The information for those reports is collected daily by the staff using a standardized ledger sheet. From those reports, we can answer all the questions I asked previously. But we also make use of the information in other ways: we use it as a basis for justifying new staff, for budgeting, and for changing procedures, such as contracting services outside our facility. (If you already collect such statistics, you should ask yourselves if you are using them to full advantage.)

### Usage Determination

Knowing how many, from where, and how much is a good beginning, but it is not enough. We also must determine the extent to which these reports are used. I would like to refer you to another paper, entitled "Report Literature: Selecting versus Collecting," published in Special Libraries, November, 1978. That paper describes our Library's efforts to determine usage, and I would like to refer to two tables from it. Table 2 shows microfiche usage over a seven year period. As you can see, by the seventh request, the number of requests tail off at a very low level.



TABLE 2 - Usage of Status A Reports: 1970-1976

Year of Ac- quis.	Number of Reports by Frequency Requested											Total Requests Filled
	0*	1**	2	3	4	5	6	7	8	9	10*	
1970	3328	1184	783	358	105	41	23	14	8	10	19	5029
1971	3209	877	827	326	130	73	46	23	18	10	18	5245
1972	1571	838	680	259	97	62	20	15	9	3	10	4097
1973	947	864	676	224	96	32	22	13	7	3	5	3788
1974	148	484	494	146	49	24	9	6	4	0	1	2364
1975	71	403	497	120	51	26	12	5	3	1	2	2251
1976	8	149	400	101	38	15	7	4	2	1	3	1604
TOTAL	9282	4799	4357	1534	566	273	139	80	51	28	58	

\* Never requested a third time

\*\* Requested a third time.

Grand total 24,378  
requests filled

Table 8 shows circulation frequency for paper copies of reports covering a period of five years. Again, by the seventh circulation, the number of reports requested is near zero.

TABLE 8. CIRCULATION FREQUENCY  
Statistics: 1972-1976

Times Loaned	Frequency	Totals
1	12,310	12,310
2	1,595	3,180
3	291	873
4	108	432
5	37	185
6	21	126
7	8	56
8	2	16
9	4	36
10	5	50
11	2	22
12	3	36
13	1	13
14	2	28
15-24	1	24
25-50	1	47

17,444

3,488 average per year

To update that paper, I want to tell you about a new system that we are using called ROARS (Report Ordering and Receipt System) that should provide us with even better usage data. At present, ROARS handles all orders and documents the receipt of all material from DDC, NTIS, ERIC, ERDA, AIAA, and XUM. It produces two order lists for each facility, one for microfiche, one for paper copies. Through the history file, the system keeps track of the number of requests for each report, the date of each request, the date the material is received, and the price. It also keeps track of the identity of all requesters and their budget numbers. Thus, ROARS is able to produce budget reports for chargeback purposes and accounting reports for reimbursing the deposit account maintained for DDC and NTIS. We can also produce lists by technical groups, by budget numbers, and by staff names. Through ROARS, we can keep track of the number of times an individual report is requested, information that will be invaluable in determining report usage and in detecting changes in usage patterns.

This system contains historical data on the microfiche collection going back ten years. It includes ordering and receiving information on microfiche and paper copy since January 1978 and has been the only system in use for reports since January 1979. Eventually, the system will include information on other reports ordered, such as those from corporate sources, and perhaps will even have entries for reports received on automatic distribution.

#### Eliminating Unused Material

In 1978 we received about 2,000 reports from corporate sources and on automatic distribution. To determine usage of reports received on automatic distribution, we first wanted to know where they were coming from. We identified 243 sources of those reports. By evaluating the content of that material and by contacting subject specialists in the Laboratory, we were able to discontinue receipt of reports from some of those corporate sources. (At the moment, the Federal Government is working with us in this matter. More and more frequently we are receiving notices from organizations saying that they are required to determine if we still need their reports.) Those we want are entered into our files as if they were subscriptions. Those entries are listed by corporate source. From the 243 sources that we identified, we received about 1,000 reports; of those, we discarded about half. For 284 reports, we could identify specific Laboratory staff members who had, at some time, requested automatic distribution from that organization. Usually, such requests were long since obsolete, and the currently arriving material was unneeded, unwanted, and unused. The area of automatic distribution is one that we will continue to review in order to eliminate what is unnecessary. If, as sometimes happens, the reports continue to arrive even after repeated cancellation requests, we will make an entry in our subscription files noting that material from that organization should be discarded on receipt. That procedure will effectively eliminate the need for evaluation of the reports and will prevent them from getting into the collection by default.



## Announcement Tools

Having determined how many, from where, and how much, and having begun to get a handle on usage, you next need to think about how you announce new reports to your users. Ask yourself these questions:

What announcement tools do you use to alert users to the report literature?

- NASA/SCAN
- NTIS/Weekly Abstracts Newsletters
- SDI (Selective Dissemination of Information)
- In-house
- Commercial
- Library Bulletin or other Library-reproduced notice of accessions.

How many requests do you receive from each announcement tool?

How much overlap is there in the announcement tools you are using? (Remember "Save the Time of the Reader")

My Library uses all of those mentioned and collects statistics on each. Our goal is to communicate with the users to determine their needs and to determine which services best meet those needs. It may be that the prepared tools are too general in scope so that the user should have an SDI based on his or her interest profile.

A major area of concern to us is the problem of potential overlap among the announcement tools that we use. We know that there is some overlap between the NTIS/WAN and the NASA/SCAN, but we have not done an analysis of that overlap and at present have no plans for such a study. Earlier this year, however, we reviewed requests from the APL Library Bulletin and then did a thorough analysis of requests received from two issues. There were about 35 report requesters from each issue and they were essentially the same people. One issue announced 350 reports, which included microfiche, those requested for specific users, or indefinite loan, and those received on automatic distribution. Our analysis showed that:

- (1) Out of some 200 indefinite loan and automatic distribution reports announced, 47 requests were received for 35 reports.
- (2) Almost all the requesters receive one or more categories of the NTIS/WAN or NASA/SCAN.
- (3) Almost all reports could be associated with an AD, PB, or N number, which means that the reports would be available from NTIS, or DDC and that they had been previously announced.
- (4) Most requests were for reports that we had acquired in microfiche and that were originally announced in NTIS/WAN or NASA/SCAN.
- (5) Only eight of the requested reports were automatic distribution items.
- (6) Four of the requests for automatic distribution items were for Agardographs that we receive at our request and keep.

Analysis of the second issue of the Bulletin showed similar results. With such an overlap in coverage it was decided that the Library would

no longer announce reports received in the Library Bulletin. Requesters would be contacted and the reasons for our decision would be discussed with them. Also, if their current awareness needs were not being met an attempt would be made at that time to better determine their needs.

### Weeding Program

Even with the procedures I have discussed, the report collection was still growing, and we had to address the question of whether we should continue to retain reports already acquired and stored. Thus, a weeding or "de-acquisition" policy for that collection was essential. It was decided that we must first reduce the size of the collection and that we must then balance accessions with weeding to maintain zero-growth. Here are some of the weeding criteria we agreed on.

We knew that the life of most of our substantive technical reports was seven years or a circulation of seven times. Therefore, except for the archival material noted below, we destroy all reports after seven years or seven uses, whichever comes first. Staple holes provided us with information on the number of times circulated, for paper copy reports not in our circulation system. Microfiche are discarded even more systematically on the basis of the statistics gathered by the older automated system. Certain types of older reports, such as progress reports, quarterly reports, proposals, state-of-the-art coverage or future projections that have been superseded, and bibliographic reports are discarded regardless of usage or age. Reports that can be easily obtained again if necessary, such as those from NTIS and DDC, are discarded, as are reports from local issuing agencies.

The Library does feel, however, that it has a responsibility to maintain a minimal archival collection of reports, and so automatically retains reports of the following types:

- (1) Reports with long-term interest to the Laboratory on topics such as radar, missiles, and aerospace satellites.
- (2) NACA documents.
- (3) Reports documenting work the Laboratory sponsored or participated in.
- (4) Reports that we are specifically requested to retain by members of the Laboratory Staff.
- (5) Reports originated by JHU Laboratories, now closed, that are not available elsewhere.

Thus, except for the archival material, essentially the same criteria are used for weeding as are used for evaluating new material for possible inclusion in the report collection. By applying these criteria rigorously, we have been able to achieve essentially a zero-growth condition in The R. E. Gibson Library's report collection.

### Maximizing Efficiency

But even achieving zero-growth does not usher in the millenium. We are still thinking and working creatively to increase staff efficiency



and operational cost-effectiveness. Just this month the decision was made that reports will no longer be indexed. Reports received will be sent to the requester for retention and those received on automatic distribution, if of value, will be given simplified cataloging and put in the book collection.

From 1960 to 1965 the number of reports ordered increased by about 50 percent. From 1965 to 1978 that number increased by 38 percent. That 50 percent jump is what prompted the Library Information Retrieval System, one of the first and most sophisticated computerized report indexing and retrieval systems. Also at that time distribution centers were not well-organized, and no commercial on-line data bases or current awareness services were available. In that environment, having our own computerized index was essential to serve our users. Now, so much is available from outside sources that in-house indexing is simply an unnecessary duplication of effort. Things have changed, and we must change how we manage the library.

The decision to stop indexing reports was based on the following reasons:

- (1) Improvement of accessibility of technical reports from major distribution centers, such as DDC, and NTIS.
- (2) Costs, per report, have been kept low enough to reorder a report, rather than storing it indefinitely, particularly those supplied by DDC.
- (3) Factual support for the contention that reports, requested by the Laboratory staff, have a useful life of seven years or a circulation of seven times. And, that applies only to a small percentage of the reports (Most reports are requested only once or twice.)
- (4) Sufficient announcement tools, available externally, to keep the laboratory staff informed without using large amounts of in-house resources.
- (5) Better external indexes and commercial data bases for reference to report literature.

### Conclusion

Procedurally, our users find what reports they need from external data bases, externally generated current awareness services, and externally published indexes. We order the reports they want from external distribution centers. Thus, our users are served; as for the Library staff, it has all the information it needs on the reports we have ordered for staff members, or added to our collections, in the ROARS data base. And, by using more external services, as they have become available, we have been able to reduce our staff from 32 in 1964 to 24 in 1979. Thus, we have been able to increase staff efficiency and operational cost-effectiveness.

To paraphrase Ranganathan, in The R. E. Gibson Library, reports are being used, users have their reports, and reports have their readers. By studying the collection and its usage and by then formulating new policies based on the realities of today, we are making our library into a maturing organism. Reports constitute one element of this

complex structure but they should not be allowed to consume more resources than their share, relative to their usage.



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Carol A. Johnson  
National Agricultural Library



## ZERO GROWTH IN SERIALS AND PERIODICALS

Carol A. Johnson  
National Agricultural Library

When considering zero growth in library serials and periodicals, there are two basic assumptions to be made: One is that federal libraries will continue to be supported fifteen years from now; and, secondly, that they will have a continued mandate to acquire and maintain these collections. It is fairly safe to assume that there will be federal libraries in the 1990s. However, it is also reasonable to assume that the kind and mix of library activities will be significantly changed. A trend is developing for more and more library activities to move into the private sector. At the same time there is increasing awareness of the need to reduce the size of most library collections. In this connection, issues and problems associated with journal holdings present some of the most difficult and important choices to be made. The time has come to conscientiously assess the actual use of journals as a means of realistically and effectively responding to the role of library collections in overall service provided to users.

Perhaps the most essential step in making decisions about journal selection/retention, is to acquire data on user's behavior. Historically, this has been done and reported in the literature as early as the 1930s, when Bradford demonstrated that a relatively small number of titles can satisfy a very large percentage of user requirements. Since that time, bibliometric techniques have continued to provide objective measures of user demands for journals. Examples of journal usage patterns can be found in work done by Garfield and De Solla Price. In their studies, as well as those of others, the clustering of user needs around a relatively small number of titles has been observed repeatedly and consistently. The practical implications of this user behavior are important to library managers, as they respond to growth questions for the library of the future. This evidence points up the realization that budget, space and personnel constraints need not be the only parameters to be factored into collection decisions.

Before looking at some data gathering methods used in libraries for the purpose of obtaining information on journal usage, there are two points worth making: First, the user clientele is an essential ingredient to the data gathering process; and, second, the mission of the library must also be factored into any decision about collection management. Given these two general guidelines, there are a number of bibliometric techniques which can be employed so that titles can be prioritized for storage, weeding or cancellation, as well as for categories of binding.

Let us turn now to some recent journal usage studies that exemplify strategies which have been effective in providing the library manager with synthesized information for decision-making. In their article on Retention Periods for Journals in a Small Academic Library, Scholoman and Ahl describe a methodology for weeding journal collections where there are a relatively small number of titles.<sup>1</sup> The active involvement of users was important to these authors. They used a questionnaire survey which listed primary journals as well as abstracting and



indexing titles, along with their holdings. Retention periods of five year intervals were presented for selection. Results were compiled and listed to show titles that would be kept for only one or two years; those whose retention could be lessened; and, those which could be considered for removal. This latter list was presented to the faculty committee. It was decided that seven titles could be cancelled immediately, resulting in a savings of \$688. There was also a 19% reduction in shelving requirements.

A similar but somewhat expanded approach was used in the work done by Johnson and Trueswell at the Air Force Geophysics Laboratory Research Library.<sup>2</sup> As in the previously cited study, a user questionnaire was distributed to all potential users. In this case, rather than listing titles in the collection and asking for required retention periods, respondents were asked to name titles they had actually used; titles which had known references of interest; and, those in which they or a colleague had been published or cited. In addition, to this user survey, data was gathered in the library at a photocopying machine. This included journal title, volume, date and number of pages copied. All titles from both the questionnaire and photocopy survey were then ranked by a criteria statistic score. This gave a rather broad ranking, resulting in many titles in each of the criteria listings. To further refine and increase the range of ranking, a weighted criteria statistic score (WCSS) was calculated for each title. This gave the summation of the number of times that journal title appeared in one of the ten ranked listings. Results of this study show that 25% of current journal subscriptions were identified by at least one of the user criteria. An interesting outcome of this study was the substantial difference between perceived ranking of titles, as shown in the questionnaire results, and actual usage, as recorded in library photocopy sheets. Some of the titles that ranked in the top ten for perceived need or use, ranked very low in library photocopy use. The reasons for this occurrence were not investigated further in this study, since its purpose was to combine all user-related data. However, refinement in criteria could easily be accomplished by using this same methodology.

In another approach to journal selection, Holland tells how journal usage data was collected at the University of Michigan Engineering Library.<sup>3</sup> Her strategy was to measure the effect of budget reductions on service to users based on time required to access information needed. Results of this investigation showed that 50% of paid subscriptions could be cut with only an 8% service reduction. A somewhat different method of addressing the problem of journal evaluation was taken by Wenger and Childress.<sup>4</sup> Their data was gathered from: a use study; circulation and interlibrary loan statistics; a core list of journal titles; and, librarian and patron input. All of this data was combined to determine an efficient method for subscription renewals and enhanced collection relevance.

There are other studies of particular interest, including the one by Brookes on Optimum P% Library of Scientific Periodicals,<sup>5</sup> and, a Periodicals Use Study by Barbara Rice at the State University of New York at Albany.<sup>6</sup> Both of these studies provide additional evidence that a relatively small core of journals in their respective



environments accounted for a large percentage of user requirements. In another report by Houghten and Prosser on Rationalization of Serial Holdings in Special Libraries, the authors describe their approach to effecting economies in journal holdings by relating and comparing total use to total cost of a collection.<sup>7</sup> These studies all provide important techniques for identifying lesser-used journals in a collection.

This preceding summary highlights some of the useful strategies being used to cope with zero growth collection policies. There is also a related and somewhat larger issue which was alluded to earlier in this presentation. That is, what do we expect libraries to look like in the 1990s? Technological developments seem to indicate that many libraries will move rapidly from a largely physically-based to an information-based orientation for service. As telecommunications becomes an economic means for source document delivery, it will not be only a question of zero growth in libraries, but one of drastically reduced collecting. As the cost-effectiveness of acquiring, analyzing, storing and retrieving physical documents begins to approach zero, there is little reason to continue maintaining large numbers of journals. In fact, except for occasional browsing or serendipity, there may be no reason for collecting titles. Any request, even the most difficult to locate, will be equally easy to obtain because time and physical factors are essentially removed through the use of telecommunications. To the librarian, this means a shift in resource needs from acquisition and maintenance of journals to building expertise and technological capabilities of information gathering and distribution. This reduced need for space may be a desirable circumstance. At current inflationary rates, one can speculate that current space and human resources will not be available in sufficient quantities for libraries in the mid-1990s.

In 15 to 20 years, there will be even more decentralized input and output of information. Technological advancements and economic necessities will lead to more networking and other sharing of activities and resources between federal and non-federal libraries. Furthermore, before the 1990s not only libraries, but most households will have computer terminals. This will provide the means for interactive communication over a wide range of information services. These rapidly changing conditions imply the need for innovative thinking and action now. Librarians need to establish a position of control in the management of information services within their organizations. Better collection management is a reasonable and intelligent way to move in this direction.

Question: I wanted to ask about consulting the users for their feedback. Doesn't that get into the squeaky wheel thing? We did that, and we got a lot of gross response from people, saying they needed stuff that, we know, hadn't been touched in 20 years. Johnson: Yes, I think that some users will make unreasonable requests for titles they imagine that they might someday need. Part of the answer to this lies in educating users to the constraints of the library. And, at the same time for you to gain their confidence in your ability to continue to serve their information needs, even if some journal titles are released. Another way to cope with this is to have a



comprehensive strategy for making journal collection decisions. By obtaining data on all or at least most of your users' requirements, and applying one of the methods referred to earlier, for synthesis and analysis, you will have a weighted or prioritized listing. Channeling persistent and unrealistic user's demands through a library advisory committee can also be an effective means of diluting their impact.

Comment: Yes, that's what we had in our library. When we went to renew, we had over 1,000 journal titles that had not been looked at for a number of years. Our librarian handed out a list of those titles to members of the library committee. There was a library committee member for each division, who had the responsibility to go back to his people and circulate that list and tell us what we should delete.

Johnson: Yes, this is a useful procedure to follow. It is important to keep all users informed of the purpose of this request. Having a strategy in mind for what to do with all those division lists after they are returned is also part of the problem. You will need to collate results and come up with the ranked listing from which a final decision can be made. In other words, it is useful to have a methodology established prior to requesting response to listings. In this case, it was the lack of use over a period of time which prompted a review of titles. Respondents should always have a clear understanding of what criteria are being used to make decisions about journal selection/retention.

Question: When you are considering users in your big library, like the Department of Agriculture, do you also consider other libraries as users?

Johnson: Yes. That gets into the point about the mission of the library. If you hold a mandate to provide service as a library-of-last-resort in a networking arrangement, or if you are required to provide an archive of materials in agriculture, these factors must be considered.

Comment: In regard to users, you must not let them think they have the final word because there are other factors. We, as librarians, must consider factors such as a long run of a periodical. Then we have the kind of user, when his particular periodical is being threatened, will run around and identify half a dozen others that he thought we should get rid of.

Johnson: I think you are making a case for the value of having a comprehensive strategy which gives the librarian more control. There may not be one solution for every situation. It is a matter of doing what works in your particular environment. If you are dealing with 4,000 journals there may be the need for a different approach than if you have less than 100 titles. In any event, there is a methodology which will apply. The important point is that one should be used. This will provide the overall ranking of journals for selection and retention decision.

Comment: It seems to me that an unstated assumption of yours is that you are describing a benign library which says, hey, we are here and



we have 4,000 journals and if you don't all come in and use them we're going to chop off a bunch of those. Did you consider that a group of journals are not being used because nobody has ever told them that these are available?

Johnson: It is, of course, possible that users are unaware of the materials available to them in the library. It was not my intention to assume we were dealing with uninformed actual or potential users. In fact, most user studies have been actively supported by a large portion of the user community. If there is a situation where librarians feel the users are unaware of the titles in their library, then a promotion campaign may be in order prior to gathering data on actual usage. A distinction needs to be made, however, between the speculation that a given title might be of use some day to some user; and, the more pragmatic reality of whether that journal has ever been used, or if its use is so rare that the particular library cannot afford to maintain it for such infrequent use.

Comment: Let me narrow down the example. In an academic situation, you do a survey and discover that a physics journal, which is terribly expensive, is the least used of all. Because it is least used and you have a benign response from the physics group, you would probably remove it if you are a benign autocrat. How long can you live in that situation the next time some accrediting authority comes in and says, you only have one out of 15 physics journals?

Johnson: I would view academic accreditation as part of the library's mission in that situation and would act accordingly, if other responsible officials did not show the necessary interest.

Comment: I sit on the serials committee four times a year, and we do selections and I find the strongest proponent for buying a journal is often the constituency of librarians. After five years, I show that something is not used at all, and I get this response, "but it's indexed." I don't give a flip if it's indexed 17 times, if nobody ever used it, it's ridiculous.

Johnson: I think this whole question of libraries acquiring more than users need is fascinating.

Comment: Most of our generation has been taught this, and it's up to your generation to tell them it is not an effective rule to go by.

Johnson: I think we have to tell ourselves, but also begin to educate others. I agree with what you are saying.

Question: Would you please go over, quickly, the concept, services and access to the National Periodical Center? Tell us where that is, at this point. This is going to be the key to zero growth collections in individual libraries.

Johnson: I do not see the cause and effect as directly as you are implying. However, it will be an important development. Although I am not in a position to tell you how it is coming, it does appear to be gaining support and momentum.

Mr. Miles: Sometimes, I think the value of an organization such as the Defense Documentation Center is not in what we do on a current basis. Maybe the most important value we have is our archival role. People need to begin to recognize and understand that and give up their holdings and put them somewhere on demand whenever you need it. This is the important thing.

Comment: There was a presentation yesterday, which I don't think you were able to attend, but APL is now throwing out 80% of all their technical reports. I thought you were going to mention what is contained in this recent article, by Miller and Markworth, on collection development from a college perspective. They say you are going to have to realign your resources, especially when it comes to small academic libraries, from collecting everything, to having access to everything. As long as it's indexed, throw it out.

Johnson: Yes, I believe that is increasingly true and that the use of computers and telecommunications are making that realignment of resources imperative.

Comment: As long as it's a low use item that is indexed, forget it.

Comment: We did something recently that saved quite a bit of space and money. We worked out an agreement with a microfilm company to give them our excess hardcopy journals, and they gave us free microfilm credit for those. They supplied those reels of microfilm to us for the credit they gave us for the hardcopy. In one year, we saved about \$20,000.

Question: Was this a trade-in allowance, or did you give them the original which they used to produce the film?

Answer: Sometimes it was original periodicals, other times they sold the periodicals to a university.

Questions: There are certain laws that come into play here. How did you get around these laws?

Answer: We wrote out a purchase order that there would be an exchange agreement, and there was no problem.

Comment: This is very localized, and some will give you a 180° different interpretation.

Comment: There is a point in here that periodicals which are soft-bound are expendable items.

Comment: I don't think I could just send them to another agency.

Comment: We were successful in this. Illinois has an inter-library loan network for all libraries in the state. We joined as an affiliate member and, as such, we will lend anything in our library to any other library. This is the only stipulation we had to make and it doesn't cost us anything. What we have done is give our hard copies of periodicals to the system. They house them, and will provide us



free photocopies in return for this.

Comment: Isn't that a private agency you were talking about, and this is a commercial thing?

Answer: This is an interchange from the Federal Government to the State Government.

Comment: I can see them letting you do that, but going a commercial company -- that's what gives me problems.

Question: Do you have any special dispensation, or analysis, of what was done by your supply people?

Comment: We wrote up a purchase order agreement with that company. This exchange agreement said we would provide hard copy, and they would supply us with microfilm. We committed ourselves over a period of years.

Comment: In our library, we are looking far ahead of what we have actually planned. A data base terminal takes very little space, but as soon as you get it you find that the use of such expensive things as Chem Abstracts drops off. The only reason we are keeping Chem Abstracts is because the national society insists on those for an accredited chemistry program. We are now dickering to see if they will trade off abstracts for the machine. So, this would be an immediate space transfer. That's one function.

Question: Have you already given up the index part of it?

Answer: No.

Comment: I know some schools that have done that.

Comment: We are very prominent, so if we lost an accredited program, that would be something I wouldn't like to be blamed for.

Question: Do you have the standards of your accrediting institution? This always comes up with us. We don't want to blow it.

Comment: Yes, and the Chemistry Society is an unusual one, and it is in the form of a crisp outline format which says you will have on your shelves the following texts. We need more space, and one of the easiest ways to have more seating space is to trade off shelves for seats. The journal collection is aging to the point where 50% is not being used. That's a very expensive storage space when you don't have enough seats. We are trading shelf space for seats.

Comment: One thought occurs to me about data bases. If we are talking about saving space, I would like to know if people are finding the newspaper data bases, for instance, Lockheed or Orbit, have significantly cut into the use of the Times Information Bank. I rather expect that the use of the info bank will drop off to the point where we will probably discontinue it because of the availability of citations and other data bases. It's not a shelf problem as these others.

Comment: We are not getting terminals in our base library, but we do site-share with the technical library on the base. We have the capability of using the terminal and we have our own account. I feel that our base is so geographically small that it is easy for us to go to another building and use the terminal. Our needs are at the base level and we need to use the terminal, maybe, once a month.

Comment: My base library is scheduled to go on-line next month at an OCLC terminal. Yesterday, we had an all day workshop out at Andrews. None of the other libraries in my command have the New York Times or DIALOG data bases. We almost all are members of the OCLC system which has proven very good for cataloging and, also, for inter-library loan. We were discussing the state-of-the-art in OCLC as far as the development of the various features of their service. From what I learned yesterday, OCLC is planning to implement, sometime next year, their information on their computer bank to have it fully developed with regard to the holdings of journals of member libraries. We look forward to this because we have been riding piggyback on the OCLC terminal; that is, on the technical library colocated on the same base with us. We do that for cataloging data and, also, we do it for inter-library loan. When we get our own terminal, that is one of the things we are really looking forward to -- being able to instantly summon up on the CRT the list of libraries who have journal holdings for this particular title. Then, we can determine the nearest one and go ahead and borrow that way. In the meantime, what we have done is taken steps to order as many indexes as we can so that, even if our holdings of journals are limited, we will be able to find a particular article and call other libraries. In my last base, I had the luxury of a back number of periodicals. There was a room set aside just for the storage of the back number of periodicals. It was adequate space, and we kept most magazines up to three years. Newspapers we would keep up to six months. When I got to my new library, the holdings were limited to a year or so. I'm getting ready to go over to microfilm, and I'm also looking forward to OCLC's implementation next year of the bank of journal holdings.

Comment: We are having a mission change on the 1st of October which means that research and development will become something else. We still have some research people, but the primary function will be something else. This is the kind of thing that is really frightening. Five years from now, we may go back to where we are now and we will have dumped everything we have.

Comment: Just about anything you do is contingent upon meeting goals, and once they change, everything changes.



#### FOOTNOTES

1. Schloman, Barbara Frick and Ruth E. Ahl, "Retention Periods for Journals in a Small Academic Library," Special Libraries, Vol. 70 No. 9, September 1979, p. 377-383.
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Richard W. Trueswell

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First of all, I would like to make some preliminary remarks. In the literature, I am quoted and I'm misquoted. Recently, there have been articles critical of some of the things I have said and of some of the things other people have said about what I have said. This causes problems about which I would like to make some comments. First of all, I do not advocate throwing away books. I think regional libraries or limited access storage is the answer because, invariably, the item you throw away is something you need. There are a great many little used books. In my own personal life, I am a string saver; I save all kinds of things, and yet, I talk about weeding and thinning.

Another thing I would like to comment on is that 99% of the circulation does not come from 2% of the collection; it doesn't come from 20% of the collection; the research I have done shows about 50% or 60%. There are operating characteristic curves found in some of the articles you can look at to get different sets of figures. The most important thing I would like to say is, "Please read the work I have published and not what others say." In particular, read about my views as to the role of a library. Let me quote a few things I have written. First, it should be noted that the primary function of a research library is to support research, if necessary, into the vast depths of obscurity, and obscurity is really important in some cases. The question of holdings size for a research library is really irrelevant. If you want a real research library, the question of size is something you should not be concerned about.

There is also the question about the difference between a good library and a really great library. It has been suggested that a good library has the material which will satisfy an acceptable percentage of the requirements of the users, and a really great library contains the materials which will satisfy all the requirements of the users and in addition contains everything else. At one extreme are the truly great libraries, the research libraries, the ones that will satisfy everything. All of the other libraries fall into the category of providing user satisfaction at some acceptable level or percentage of the total requirements of the users.

How do you define and measure the requirements of the users? The research work I have done has been limited to circulation usage. Some people argue supportively that circulation use corresponds to in-house use of the non-circulating books. We need to question what kind of library is it, what are the user requirements, and what is an acceptable user satisfaction percentage. I feel that circulation satisfaction is one of the more significant measures of library effectiveness.

Some characteristics of a library are much like a business organization, but unlike a business organization, the library is not, typically, required to show a profit. There have been some suggestions



toward the development of standards of performance and criteria for evaluating the effectiveness of the library and its holdings. If we return to one of the aspects of business and its relationship to libraries, we would find the following: inventory is a necessary part of business, and it is needed to satisfy the demands of the customer. One characteristic of inventory in business or industry is that approximately 80% of the number of transactions of items taken from the warehouse represent about 20% of the types of items stocked. This may also be considered as a ranking of the stock items by their transaction activity, which will show that the top 20% of the stocked items account for about 80% of the total number of transactions. The rule is sometimes expressed as the 80/20 rule or the 75/25 rule. It is only by coincidence that the 80/20 or the 75/25 rule adds up to 100 but it essentially says that a high percentage of the transactions come from a relatively low percentage of the stock.

Let me now make some remarks about zero growth. Dan Gore, whom some of you may have read about, is a very fine person and a good friend of mine. He has said a lot of nice things in the literature about my research. Some people swear by him, and some people swear at him. He has tended to not exaggerate, but perhaps, emphasize, fairly strongly, some of the findings. He is basically saying that libraries don't need to be as large as they are. I would agree and in my view there is an optimal size for a library; and there is some research that supports this. Let me make some specific statements about the no-growth concept. First of all, it does not mean you should stop buying books. Acquisitions librarians will do their best to predict the requirements of the users. They will talk to the users and the faculty members, look at catalogues and, in general, they do a very fine job. However, there is always someone who comes along and says, "You bought that book and it hasn't been used in ten years; therefore, your selection was a mistake." I don't accept this at all; I think the books, in general, which are selected, are appropriate. The no-growth concept does not mean that you should stop buying books for libraries, but in my view it does mean you should buy as many books as you can that are relevant to your library's mission or objectives.

Obviously, selecting the books is not the problem, in a sense. For any of you who have done book selection, if you had all the money you wanted, would you have had a problem selecting books? You are always constrained by finances. The real problem is having enough money, and then, you could pick out the books you would like to have.

You should allow your collection to grow to a capacity that is commensurate with the physical size of the library. At that level, my philosophy to maintain zero growth would be to remove monographs having the least use at a rate equal to the acquisitions rate. The books that you remove should be put into limited access storage or somewhere, but you don't throw them away.

Participant: If you pull the monographs out, where would they be retained? Trueswell: Limited access storage could be cartons in a warehouse because you will have few requests for the items. Ideally, what would be appropriate is to prepare a computerized data base of the



little-used items and, literally, maintain a catalogue of those little-used items. If someone asks for one of these items, you put it back into circulation. One way of doing this is through several libraries cooperating. The little-used volumes at Amherst College, at Smith and Mt. Holyoke probably show a lot of duplication. I can't give you specific examples, but clearly, titles which are little used in one library will in most cases be little used in a similar library. These could then be put into a regional storage library.

If you use the last circulation date, which is an indication of the use, and apply the results of research in this area done by myself and others, you can predict how many books you will take out of the stacks. You can also predict what the effect will be on circulation. By using a particular decision rule, the last circulation date, for example, you can then predict what percentage of the books will be removed from the stacks when you apply that rule.

Participant: We used that rule in the last 10 years, and we found that some of the books were used in the library only and never checked out.

Trueswell: My only answer to that is that I wouldn't advocate using any of these decision rules arbitrarily. A handbook might be allowed to circulate, but, in all probability, it won't circulate. There are many cases where if you applied only this decision rule, you would be taking out reference items. It's a first order approximation and you take a second look at some of these.

Participant: Your approach assumes that you can determine the last circulation date.

Trueswell: Yes, you have to put that date in there or use some kind of computerized circulation records.

Participant: When we were at the National Air and Space Museum, unless I'm wrong, when I looked in the inside back covers, there were no pockets and no cards and no date, which is an instant problem.

Trueswell: You are absolutely right. I strongly advocate some date or record of use for all monographs.

Participant: When you are thinking about this, you have to incorporate some of these manual or mechanical features to ascertain this kind of information.

Trueswell: The most important indicator of the use of a book is its use. It's not hard to start applying the last circulation date as the book goes out. It only takes a few years before you are down to a situation where you are talking about 80% of the circulation. Initially, if you have a circulating library and no date stamps, and you begin stamping the books. The first day you stamp all the books, then two weeks later you date stamp almost all of them because some other book would be returned and taken out again. A month later you might be stamping 90% of them because some of them would have been already borrowed. With time, that curve drops very rapidly, and you find



within 2 or 3 years, you have few books going out which haven't been date stamped, which are representing 10-25% of the books that are brought for circulation.

The same approach applies if you are starting a new circulation system. If you started a computerized circulation system you might begin putting punched cards in the back, or adding tapes, or whatever. If you start this you have a choice. Do you take every book in the library and convert it to the new system or do you convert the book as it's being circulated, either when it's returned or borrowed? If you choose the latter, you will find initially that you have to convert all books being circulated, but you will find you are down to a relatively low conversion rate very quickly.

Perhaps you find that about 70% of the books that are being borrowed have circulated at least once in the last eleven months. Because you are ranking it and setting up a cumulative distribution, you will find about 50% of the books have circulated at least once in the last six months. If we are talking about the number of months from the last time the book circulated, what you can do is keep looking at the books week after week, because you are really not talking about the actual date. You are saying how many months since the book previously circulated. At Mt. Holyoke, we looked at every book for an entire semester, something like 15-20,000 transactions. We recorded how long since the last circulation date, and then, we ranked the data. If you also look at the stacks and do the same thing on a sampling, or even do it with all the books in the stacks, you will find that the stacks have a similar characteristic - the holdings characteristic. You will find that about 15% of the books in the stacks have a previous circulation date within the past year. If 15% of the books in the stacks have a last circulation date within the last year, and 70% of the books that are borrowed have a circulation date within the last year, then you can say that 70% of the books came from the 15% of the stacks since they both have the same characteristics.

Perhaps 50% of the books that circulated have circulated at least once within the last six months. If you look in the stacks, and you find about 10% of the books in the stacks have circulated within the last six months we can put those two pieces of information together, and we can say 50% of the circulation has come from books that represent 10% of the stacks. We could also say that if we eliminated from the stacks all of the books that have a last circulation date beyond that particular time, we would eliminate a certain percentage of the books, and we would eliminate 90% if we chose six months. If we go to 36 months and use a cutting rule to keep all books that have circulated within the last three years, we would keep approximately 39% of the books in the stacks. If we also applied that rule we would find that we would be affecting about 12% of the stacks.

We can take those pairs of information or pairs of data and combine them. Remember, I said that about 80% of the circulation comes from about 25% of the stacks, and that 80% is made up of books that have last circulated within 15 months. If we take that paired data, we can say 80% of the books come from about 25% of the stacks. This is what I call an operating characteristic of the library. Closer examination



may reveal that 90% of the circulation comes from 45% or 50% of the holdings.

Participant: Does weeding have anything to do with this?

Trueswell: Weeding based on use will affect the operating characteristics more by shifting it more to the left. What we found is that you can say that 95% of the circulation comes from 60% of the stacks. We took some data in 1966 and asked how many books are in the 60% of the stacks. To get this we multiplied 60% times the holdings size. Then we said how many people are on the campus at the time - the number of users, so to speak. Then, we divided the number of volumes in 60% of the stacks, the by the number of students and faculty, and we got a number of around 17 or 18 per user. This is the sixty percent core, so to speak. Then in 1974, we repeated the same study, and we noted that 95% comes from a certain percentage of the holdings. We computed that quantity and divided it by the number of students on the campus in 1974 and it came out to 17, which was very close to the 1966 figure. It was only two pieces of data, but this leads me to suspect that there is a core collection that circulates, and that core collection has this typical characteristic. Regardless of how many books you have, there will be a certain number which circulate frequently. You might be able to say that if you were going to establish a library on a campus which would satisfy a certain percentage of the circulation requirements, there might be some index number you could use like 20 or 25. You can multiply that index number by the number of students on campus, and say, "This is the size of a 95% satisfaction-type library."

Participant: Do you think that students xeroxing pages out of books would indicate they are not taking them out but using them in the library?

Trueswell: That question is the old in-house versus circulation question, and there have been some articles where they tried to compare in-house use and circulation. Most everyone seems to conclude that they are about the same. To say they are about the same is not very precise and not very exact. These are patterns, and subjective comparisons, not statistical information. There is the evidence, and you can see what happens when you develop these operating characteristic curves. Then, it is up to the librarian or administrator to do something with it.

In conclusion, let me say that each of you can do similar studies of your own libraries and from these studies develop information that will allow you to predict the effects of applying decision rules using the last circulation date. These results, these decision rules, etc., are not all inclusive, but instead must be used as tools applied by the skilled artisans.

My final request is that you read what others say about my work but before you accept what they say, please read my work as it represents the original effort and statements.



## TASK GROUP 6

### BASIC PLANNING FOR LIBRARY AUTOMATION IN THE 1990s

Discussion Leader: Bonnie Davis, Naval Explosive Ordnance Disposal Facility, Indianhead, MD

The task group will review basics related to library automation, future trends and the effects of automation on libraries.

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#### Wednesday, 3 October

1050-1200 - Session 1

Planning for the Future: The Question of Automation -  
Barbara Taylor and Lester P. Needle, Sigma Data Computing Corporation.

1330-1500 - Session 2 (joint session with Task Group 3)

\*Library Automation - Charles Goldstein, Lister Hill Center for Biomedical Communications, NLM

#### Thursday, 4 October

0920-1130 - Session 3

Electronic Publishing and its Implications for Libraries -  
Dr. Donald King, King Research, Inc.

1330-1530 - Session 4

A Skeptic's Guide to the Paperless Society -  
Richard Boss, Information System Consultants, Inc.

#### Friday, 5 October

0950-1200 - General Session

Task Group Summary - Bonnie Davis

\*Paper not available at time of publication.



Task Group Leader  
Bonnie Davis, Naval Explosive  
Ordnance Disposal Facility,  
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Barbara Taylor, Lester P. Needle and Bonnie Davis



## PLANNING FOR THE FUTURE - THE QUESTION OF AUTOMATION

Barbara Taylor and Lester P. Needle  
Sigma Data Computer Corporation

### Introduction

Just like a MacDonald's fast food outlet, automated library systems seem to be mushrooming. This phenomena is forcing the librarian to decide not only whether they should automate but which functions should be automated. As many librarians now occupying management level positions never had the opportunity to take courses in library automation, the automation decision can be frustrating and even terrifying. However, if MacDonald's can build a better hamburger, librarians can build a better library - which is the purpose of this paper.

Let's look at a little history. Twenty years ago, only the very large library could consider automation. Normally, an IBM computer was used, and data processing staff had to be hired or borrowed from the parent organization. Because the IBM machine was so costly, the library could only get limited access to it after payroll, accounting and other vital functions were completed. This restricted library applications to a "batch" mode. In this operational environment, circulation reports, book catalogs and journal union lists were produced after hours. Library staff spent countless hours in front of keypunch machines, entering their data on 80-column punch cards, and the deck was submitted to the computer in the evening. The reports could be picked up the next morning. The basic problems with automation in these early stages were as follows:

- (1) Frequently, even one mispunched card could cause the program to abort, with the end result that there was no report the next morning.
- (2) The reports, once generated, were out of date.
- (3) Updating the file was time consuming because if the keypunch operator missed one character, the whole card had to be reproduced.
- (4) Computer time and resources were costly. There weren't many computers in operation and there were even fewer knowledgeable programmers.

The net result was many automation failures and much despair on the part of librarians. The cost was too high, the result too inadequate.

Today, we are dealing with a new environment. First, the librarians are much more knowledgeable. Second, the commercial sector has finally taken an interest in the library business, or more broadly the information business. Third, the cost has dramatically been reduced. Let's look at the impact of this evolution.

Why are librarians more knowledgeable? Much credit can be given to the Library of Congress and the Ohio College Library Center (OCLC). The Library had the foresight to establish a standard format for bibliographic records which could be interpreted by computers. This format is called a "tagged, variable-length" record structure. Tagged means that each piece of bibliographic information has its own unique 3-digit ID. Variable length means that a title can be as long or short as required. Also, the record could contain a varying number of pieces of information or data elements. For example, one publication might have only one author while the next might have three.

The resultant format developed by the Library of Congress was called MARC, for Machine-Readable Cataloging. It was described as a communicating format which libraries could use to exchange information. The MARC format is now internationally recognized. Even today, however, it is not widely used in internal library operations. This requires a bit of definition.

A variable format (i.e. a tagged, variable length record with a varying number of data elements) is the most complex record structure for computer programmers to use. There are very few programmers who have the experience required to handle this type of record. Therefore, many MARC subscribers purchased the tapes and never processed them. Libraries that did process the tapes paid enormous prices for automation. The key point is that the records were never truly designed to handle processing requirements, they were designed to meet communication requirements. Fortunately, into the void came OCLC.

The Ohio College Library Network probably did more to revolutionize library automation than any single entity. There was the logical next step after the Library of Congress developed a standard communicating format. OCLC accomplished two things:

- (1) They concentrated the programming resources necessary to build a network, which could be used by libraries with no data processing staff, to obtain catalog data.
- (2) They aroused the interest of the commercial sector by showing that a market existed.

Today, OCLC is dealing with problems of size and diversification. They have thousands of users and millions of catalog records. They have far exceeded their original goals in providing a network service. They represent a strange mix of obsolete and advanced technology. For example, the computers they use are no longer being manufactured. Xerox Corporation abandoned the computer field several years ago. Their primary product is catalog cards. While they have tremendous computing power to produce automated products, their primary product is still the catalog card. They produce tapes - but in the same complex MARC format. Librarians acquiring these tapes are sending them to commercial companies to manipulate them to produce the book catalogs. On the other hand, OCLC is attempting to venture into new areas - exploiting the vast bibliographic file to meet critically needed interlibrary loan functions and developing automated acquisition



products are just two areas of development. At present, these developments are going slowly. As anyone in the computer business can tell you, your initial product is the most soundly constructed. Add-ons and additions are just that. It is like an addition to an existing house. It is difficult to obtain a perfect fit. You patch and paste to accomplish the end objective.

Library automation would never have reached the current popularity if the commercial company had not sensed a profit. We have witnessed the growth of database retrieval services such as Lockheed, SDC and BRS. These companies acquire bibliographic databases and charge libraries a royalty time-based fee for use of the database and the number of records printed.

The latest interest on the part of vendors has been products which can be installed in the library. Circulation systems are at present the most popular, along with automated book catalogs in printed form or microform.

From the librarian's viewpoint, much has happened in the last ten years. The Library of Congress provided a structure for bibliographic data; OCLC built a service by using that structure, and commercial vendors have been attracted to the market place. The competition among vendors today has resulted in increasing cost breaks for the library for two reasons:

- (1) The competition itself forces vendors to keep their prices competitive.
- (2) Computer hardware costs have come down dramatically over the years. The analogy is the calculator. Several years ago, a bulky calculator cost over \$100.00; today a compact calculator, with memory, can be purchased for \$12.00. The same technology is used for computers.

The timing is right: libraries can participate in networks, buy services from vendors or install in-house system. The question is how to plan for the future. Not all libraries should automate, and with so many services and products to choose from, how does the library decide which will benefit its operation most?

Many pitfalls await the librarian on the road to automation. The three most important to consider are:

- (1) User needs
- (2) Evaluation of the current system
- (3) Selecting an automated service or product.

#### User Needs

The mission of a library is to effectively serve the user. The purpose of automation should be to serve the user better. The problem is to define the user and user requirements.

Many libraries have felt increasing pressure to become active information disseminators rather than passive collectors of information. This pressure has even forced many libraries to change their name from "library" to "information center." In reality, however, there is a place for both types of institutions. The difference lies with the user. Let's look at some typical users:

- A base library user. This person may be predominantly a "browser." They select whatever attracts their attention from the shelf. Frequently, paperbacks, because of their colorful covers and portability, have excessive circulation. When they get "stuck" trying to find a book, they quickly give up on the catalog, and ask the librarian. Once they find their materials, they like prompt charge-out service. Also, in order to keep the collection of popular circulating publications intact, they need to be impressed with the requirement to return materials.
- A school/university user. They have several reading lists. Controlled circulation is important. Having materials available on reserve is critical. Instructors must be able to use effective information retrieval services to establish current reading lists. Again, the user is likely to "give up" on the catalog and ask for assistance.
- A researcher. The true researcher likes retrieval tools - the more the better. They usually need the latest information and they are intrigued by automation, microform catalogs and so on. They like to work independently, without library assistance.
- Geographically dispersed users. They require a portable catalog, i.e., one that is on microform or available on-line.
- A non-user. The non-user is the library's potential clientele. They may have once been library users and became discouraged. They may fall into an age group that, traditionally, are low-level users. They are a target group.

Your first decision, after categorizing your users, is to determine what product or service will most dramatically improve your operation? Let's look at the possibilities:

- Circulation: Ideal for the browser and school/university user. This system frees staff so that they can concentrate on helping bewildered users. It is impressive, it speeds charge and discharge operations, and the user knows that the computer will remember that he borrowed fifteen books without ever returning them.
- Acquisitions: Ideal for researchers, instructors and library management. Even though it is "behind the scenes," the process of acquiring and processing materials is speeded up with the result that the patron can use more current materials. Also, the patron can quickly determine the exact status of



all items on order. Lastly, management can be given detailed accounting reports.

- Cataloging: Ideal for geographically dispersed users. By getting the catalog in computerized form, the library can take advantage of various retrieval technologies such as computer-output microfiche or film, or on-line retrieval systems. Again, increased speed in processing materials is a plus.
- On-line Retrieval: Ideal for the researcher and instructor. Having the catalog "on-line" means that librarians and patrons can perform searches combining several subject terms and obtain bibliographies covering materials retained in the collection.
- Journal Union List Networks: Ideal for the librarian. Joining a journal union list network allows the library to share journal and serial information for interlibrary loans.

By now you may have some specific ideas where automation can dramatically improve your library's performance. The next question to ask is, "Is it necessary?"

#### Look at Your Manual System

If your procedures are not systematic in a manual system, they will be chaotic in an automated system. All excess files, data collected and processing steps must be scrutinized. To do this, get out a pencil and paper and do the following:

- STEP 1: List each operation. Beneath that, list each step performed in support of the operation.
- STEP 2: Assume your staff has been cut by fifty percent starting tomorrow. Eliminate fifty percent of your processes. Your viewpoint should be that you must maintain a survival state, and the user must be satisfied. This may seem draconian to you, but it forces you to streamline all operations.
- STEP 3: Now that you have eliminated unnecessary files and steps, let's look at the information you collect. For example, what is the minimum amount of information for cataloging? Will the user suffer if the place of publication, number of pages, alternate and series titles are not listed? What percentage of the time will they suffer?
- STEP 4: Instigate the revised system. Your performance may double for free - no automation!

If you had already streamlined your operation, then the above exercise is decidedly an exercise in futility. At this point, you must consider automation. The question is, "What type of automation is best?"

## Library Automation - What Will Exist in 1990?

All of the preparatory steps up to this point apply whether you plan to automate this year or in 1990. If you automate today, you have several avenues of automation available to you:

A Service: Typically, services available today are closely monitored or run by librarians. They are the result of library network activity. Several vendors have entered the field. Some of the most rapidly growing services are ones where the librarians comprise a Users Board governing developments and enhancements. The following is a generic list of such services.

- OCLC
- Regional Library Networks
- Cooperative Journal Union List Projects

A Library Facilities Service Center: This is a new concept which is still in the evolutionary stage. It is a service center devoted to meeting in-house operational requirements of libraries. Typically, the service center will have an array of software packages for the library to choose from, including automated acquisitions, cataloging, book catalogs, on-line retrieval, circulation systems and so on. Custom enhancements can be contracted by the library so that reports and products truly meet in-house requirements.

- DATALIB Service Center
- Washington Library Center

A Library Product: These are software packages which are called, "turnkey," meaning that they are installed in the library and operated by library staff.

- CLSI (A circulation system)
- DATALIB
- DATASEARCH

### A Customized Product:

- You must educate yourself or add a qualified person to your staff
- Decide to develop in-house or use vendors
- Determine budgetary constraints - inexpensive batch versus expensive on-line technology

When developing customized software, the library generally will save money by using an information technology vendor. Such vendors have demonstrated the capability of designing and installing library systems. You should see their systems and talk to their clients. Also make sure that the programmers are aware of the timeframes and budget constraints. Delivery deadlines may impact design; budgetary considerations definitely do. Never ask a programmer if something can be done; the answer will always be "yes." Ask, at what cost can this feature be added. There are two costs: the impact on the system



development and installation, and more importantly, the impact on operation. For example, you may want a sophisticated invoice/receipt function for your acquisitions system. The programmer may never tell you that it will take ten minutes to perform invoice/receipt; whereas, manually it may have taken only two minutes.

The picture for the 1990s still maintains the basic categories: a service, facility service centers, products and customized products. The emphasis, however, will dramatically change. Right now, service is at its peak. Services include OCLC, information retrieval systems such as Lockheed, SDC and BRS, book catalog and microform catalog production, and union lists of journals. The library will have an expanded variety of services to choose from. There will be more competition driving down prices for these traditional services.

Facility Service Centers will increase in popularity to handle in-house library problems. While networks, such as OCLC, can process information, it cannot support the unique operational requirements of every library user. This must come from another direction. For the small to medium-size library, a new service will evolve - the service center. This center will cater to a small group of libraries - perhaps a dozen. It will perform all of their automation requirements for acquisitions, original cataloging, circulation, and information retrieval. Specialized accounting and management reports can be written. The group of twelve libraries will form a users council to guide the development and management of the facility. These service centers will frequently attach themselves to larger networks, such as OCLC. In this integrated environment, the library will dial up their terminal to the service center. They will be automatically transferred to OCLC, or other large networks, to search and retrieve records for use in acquisitions and cataloging. Selected records will be transferred to the service center. Acquisitions data can be added to support the generation of purchase orders, pending reports, and accounting reports. Catalogers can revise records to meet internal information retrieval requirements. Immediately, the bibliographic record will be accessible by patrons and library staff so that title, author and complex subject searches can be performed. Automated circulations complete the picture.

Large libraries, rather than joining a service center, will buy the total computer and applications programs to perform acquisitions, cataloging and circulation. They will still have external links to service, such as OCLC, Lockheed, etc.

Libraries that are partially automated and have already purchased products will have to pay to have custom software developed to interface the various products they have purchased. This is a small price to pay considering they have had the use of automated technology for several years.

Customized products will become less important as commercial products develop the flexibility needed to support internal library operations.

A brand new technology will probably be just emerging which, ultimately, will allow the user at home to use his television, telephone and

a special keyboard to access local or regional library collections. The user may pay a fee for such specialized services as having the publication mailed to his home, or having it retrieved by library staff and put on reserve for pick-up. Support of the off-site user will increasingly dominate the imagination, but it will not be a viable 1990 technology.

The evolution of library automation has assumed a curious path. It started with each library trying to do its own thing. It was restricted to the large and wealthy libraries. It faced a great deal of failure along the way. This gave birth to the age of networks and cooperation. OCLC epitomizes this effort. Then vendors saw the possibility of a profit in the information business.

With a keen sense for the marketplace, vendors have divided themselves into two categories. One category has concentrated on providing services external to the library. Lockheed, SDC and BRS acquire bibliographic data bases. Each vendor may support over sixty different files, concentrating the literature in chemistry, government reports, environment, law and so on. Libraries pay for access to this information, and they obtain bibliographies about what has been published. However, the bibliography never tells them where the information can be acquired - which library holds the material.

The second category focuses on providing libraries with inventory and processing control: a circulation system to monitor shelf activity and patron borrowing, an acquisitions system to control purchases and budget, a cataloging system to inventory publications acquired by the library, and an information retrieval system to provide the wildest informational access to the collection of materials. This second category will probably show the greatest growth in the next twenty years. Vendors will offer these services through a facilities service center or by purchase. And in the distant future, the library, as it is known today, may become extinct as it gradually becomes a "switching center" and the user's home becomes the "library." At any rate, it will be an extremely interesting period in which to be a librarian.



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Dr. Donald King  
King Research, Inc.



## ELECTRONIC PUBLISHING AND ITS IMPLICATIONS FOR LIBRARIES

Donald W. King  
King Research, Inc.

I'm going to give a talk about technology in libraries that perhaps is somewhat different from what you have heard recently. For one thing, I'm not going to try to emphasize descriptions of very large storage devices, very small storage devices, the speed of computers, or the dramatically decreasing costs. What I will do is try a little crystal ball gazing and predict what is going to happen by the 1990's -- particularly with electronic processes involving published materials.

First, I would like to point out that there is already a great deal of technology used in libraries. A survey conducted by us for the University of Pittsburgh,<sup>1/</sup> indicates that 84 percent of public libraries have microform collections and equipment, 68 percent have automated circulation systems, 59 percent have computerized cataloging, 42 percent have online systems or terminal access, and 45 percent have other technological aids for service to special clients. Even so, there seems to be some resistance to technology. For example, 42 percent of librarians who were contacted felt that technology advances tend to dehumanize our lives; accordingly, a similar percentage indicated that they went into libraries to work with books and not machines; and 37 percent felt that librarians will not one day be obsolete due to technology. On the other hand, 60 percent indicated that technology gives us more control over the environment; 73 percent see technology as an extension of themselves that enables them to work more effectively; 61 percent do not feel that interpersonal relationships will suffer due to technology; and only 22 percent felt that one day technology would reduce staff in their libraries; and 25 percent would prefer finding materials through the use of card catalogs than with mechanized devices. As you might guess, older librarians tend to be more resistant to new technology than younger ones.

First, I will discuss the future of online retrieval systems and then electronic processes involving the published literature. I do want to state one caveat which is that any data that I present is limited to scientific and technical information. That is because most of the work leading to the results given below was funded by the National Science Foundation and there were constraints as to the subject areas we investigated.

I mentioned previously that 40 percent of libraries have online systems. There is no question that the amount of use of online systems is growing very rapidly. In 1968, it is estimated there were only about 10,000 searches performed.<sup>2/</sup> This amount grew very rapidly to about 500,000 in 1973. In 1978, this number was estimated to be about two million, and by 1985 it is estimated to be around four million searches a year.<sup>3/</sup> If there are in the neighborhood of 40,000 libraries (public, Federal, academic and special), the average number of searches per library would be about 100 per year. We found that only about 10 percent of the scientists (or engineers) in the U.S. use automated bibliographic data bases; whereas, over three times that



number use numeric data bases.<sup>4/</sup> In the journal literature, we estimated that the computer searches were used to identify articles that were read in less than 1 percent of the readings; compared to 25 percent of the read articles that were found through the printed index, 11 percent through cited articles, 18 percent from other persons and 40 percent through browsing the literature. The point is that, even though there is a great deal of online searching taking place, both librarians and scientists are inclined to rely a great deal more on other methods to identify articles that are read.

What can we expect in the future? One way to focus on the future is through a study being conducted by Wilf Lancaster.<sup>5/</sup> He recently began a Delphi survey which is a survey technique used to find out what experts in a field think will happen in the future. For example, one can speculate whether or not bibliographic services will be completely electronic (that is, completely electronic as opposed to paper-base) and, if so, when that event will occur.

In answer to the survey comment: "For the first time an indexing or abstracting service is discontinued as a print-on-paper publication and is published only electronically," nearly all of the expert respondents indicated that it is technologically feasible. Of the expert respondents, 28 percent said by 1980, 46 percent by 1985, 41 percent by 1990, 5 percent by 1995 and 2 percent said after the year 2000. (Even though the respondents are experts in the field, it should be mentioned that there is such a system operating right now.) Most of the respondents indicated that they thought that 25 percent of the bibliographic publications would be completely electronic by 1985 or 1990, and most of them felt that by 1995 50 percent of the bibliographic publications would, and after the year 2000, 90 percent would be.

Incidentally, I was a respondent to this particular survey and I seem to be about five to ten years behind the norm or the mode, so that you can see that I am more pessimistic than other experts surveyed in the field. Therefore, you may wish to take that into consideration in judging what I say. I am more pessimistic than many experts for economic reasons rather than technological reasons. Let me give you an example that supports my intuition. When preparing abstracting and indexing publications, there is a very large fixed cost that is associated with the abstracting and the indexing process and preparing tapes or the master images that are used (i.e., for the tapes that can be used for online searching or for the publications). These large costs are incurred whether there is one sale or a million sales of a publication. If all the sales are in publication form, these costs must be covered in the price of the publications. That is why the Chemical Abstracts, for example, is priced around \$4500 for a year's publication. The reason that the Chemical Abstracts is much more expensive than most other bibliographic services is that they include chemical compounds which require expensive processes; both from the standpoint of identifying the materials (because they appear in such a broad range of literature) and in handling chemical compounds graphically. The point is that regardless of how many publication sales they have, the large fixed costs must be recovered. If Chemical Abstracts experiences only one sale, the fixed cost for that sale would be in the millions of dollars. If all the sales or uses of the Chemical



Abstracts took place online, they would need to cover that large cost as well. Thus, the cost for searches on the bibliographic data bases must be covered by the price being paid for that. Right now, they are not being covered very well; that is, the price for online searches, for the most part, covers mostly the cost that is incurred by the data base producer such as Lockheed, SDC, BRS and the others. You also pay for the line charges; and of course, you pay for your own terminal.

There is no question that the line charges and the terminal costs are likely to come down dramatically. But, as the library services begin to gravitate toward online services, more of the cost of the large input must be covered in the price of the online searches. If libraries begin to cancel their subscriptions to the published data bases in order to perform online searches instead, the price of the searching must increase. This presents a real dilemma. This is a very big problem for the abstracting services. The problem there is that libraries are always faced with a choice of whether or not to purchase an expensive service. But the point is, that the large, fixed costs are going to have to be covered and there's a tradeoff that is made in libraries to decide whether to purchase the published materials or to use online searching (although many of you use both, of course). That tradeoff is partially economic, although it is also based on such factors as convenience to patrons. This means there must be a balance between the price of the online searches and published bibliographic products. I believe very strongly that it's desirable to have the capability of doing online searching, but that there is a possibility that the prices are going to go up which will have some impact on the amount of searching that will take place in the future. That is the basic reason that I am a little bit pessimistic concerning the likelihood that searching will be automated in the foreseeable future.

I mentioned previously that I did think that the line charges and the terminal costs are likely to continue down for a number of reasons. One reason is that new technologies will help such as optic fiber and satellites. There is little question that we are going to be able to obtain a broader range of materials through telecommunications at a much less cost. Another factor that will further the reduction in cost is use of intelligent terminals or microcomputers that have the capability of quickly receiving a long message, storing it, cutting off the communication and then printing it out at the leisure of the equipment. One of the current problems is that many of the terminals that are used now require keeping the communication lines open while the terminal prints out a long message. Many libraries are getting equipment for automated circulation, cataloging, and so on that can be used for online searching. Use of this more powerful equipment should reduce the online search cost substantially. As a matter of fact, we estimated that if one employs a 2400 baud terminal, with the ability to capture information, the cost could be reduced to one tenth the current rate.

I think that it is also desirable to have a capability of automatically retrieving full text of materials such as journal articles. This would seem to be a natural extension to online searching. That is, once one has identified needed articles, it would be desirable to be able to push another button and have the full text of articles retrieved;



particularly if they are not available in the library.

We now have all the components of a comprehensive electronic journal system. It is possible technologically and even economically. The principal advantage of a comprehensive electronic journal system is that individual articles can be distributed in a manner that is most economically advantageous to them. On the average, there are 2.5 billion copies of articles distributed by publishers every year. There are about ten copies of articles that are distributed by publishers through subscriptions or other means for every one that is read, so that there are some inefficiencies in the sense that there are costs associated with reproducing those unread copies, preparing them for mailing, mailing them, receiving them, the acquisition costs of libraries, and so on. Again, a few articles are frequently read and many infrequently read. If we can find some way to choose or identify the infrequently read articles (where there are thousands of copies sent out for one reading), electronic processing on demand is the most economic form of distribution. As a matter of fact, we find that the break-even point is something about like 50 copies distributed per reading. If the number of readings is less than that, it is cheaper to do it electronically than it is to distribute it in paper form. In other words, if a journal has 10,000 subscribers, it means that every article in that journal is distributed 10,000 times. Now, some of those articles may be read 10,000 times and some may be read 20,000 times; but there may be many articles where there may be only about 10 or 20 readers out of those 10,000 copies distributed. When the latter happens, it may be less expensive to distribute an article electronically than it is to distribute it in paper form.

Another consideration has to do with economic problems again. Two of my colleagues, V. E. Palmour and Robert Widerkehr (whom some of you may have heard yesterday when he talked about a cost model for cataloging with AACRII) conducted a library cost model for making decisions concerning whether libraries should purchase subscriptions to journals - as opposed to borrowing copies through interlibrary loans. There are many bases for making that decision; one of which is economic. It does not make much sense to purchase journals if they are never read. The fact that the number of subscriptions to journals by libraries is going up much more slowly than the average number of subscriptions to individuals is a reflection on the fact that people are beginning to recognize this. The question then becomes one of how many readings or how many uses of a journal are necessary to warrant purchasing a copy of that journal - as opposed to relying on interlibrary borrowing. Palmour and Wiederkehr <sup>6/</sup> found that the number of uses ranges anywhere from about five to ten readings of a journal. If number of uses is less than that number, then it is less expensive to rely on interlibrary loans. If it is greater than that number, then it is less expensive to purchase it. Data from the University of Pittsburgh study <sup>7/</sup> and a study done by Dr. C. C. Chen at MIT <sup>8/</sup> show that the distribution of use of journals within a library is very highly skewed. For example, something like 30 percent of the journals have fewer uses than the break-even point. Thus, as much as 30 percent of the journal subscriptions would be cancelled (based on economic considerations alone). This is because it would be cheaper to rely on interlibrary loans than to purchase those journals. If this factor is applied across all libraries, then approximately 30 percent of the



journal subscriptions to libraries would be cancelled. We find that something like 35 percent of the subscriptions to journals are library subscriptions, but that is much higher for small journals than for large journals. That is, for journals under 3000 subscriptions, roughly 60 percent of their subscriptions are to libraries and the remainder are to individuals; opposed to large journals like Scientific American or those over 10,000 subscriptions where only about 20 percent of the subscriptions are to libraries rather than to individuals. Thus, if 30 percent of the subscriptions to the small journals are cancelled, the effect is much more devastating than it is to the large ones. Furthermore, we estimated, through our photocopy studies <sup>9/</sup> that we did on the new copyright law, that there is a tendency for the small subscription journals to be borrowed more frequently than the large subscription journals. In addition to that, we find that the subscription price to libraries of a small journal is much higher (I believe about \$60 for small journals as opposed to about \$20 for large journals). This means that the breakeven point is higher for the small journals. Thus, there has to be more readings of a small journal in a library to make it economically worthwhile to purchase. For that reason the proportion of small journals under the breakeven point is even higher than 30 percent; maybe up around 35 or 40 percent.

There will always be a question of the tradeoffs as to whether one purchases a journal and make it available to their patrons or to depend on interlibrary loans, acquisition of individual separates from publishers in the form of reprints or through some electronic means. One of the biggest disadvantages of relying upon an interlibrary loan for getting copies of articles is that there's a large time delay. I think that we estimated the average delay is about two to three weeks. One of the reasons that there is a large time delay is that oftentimes borrowing libraries or a net lending library like Harvard or one of the big university libraries and the journal or article is out or not available for some reason. Then another library must be approached.

There are some electronic systems that are attacking this problem (the MINITEX system in Minnesota is a good example). MINITEX has a TELEX system where libraries can request an interlibrary loan and they can immediately transfer the request to a library in their Minnesota system that has the desired article. The JACS system that NTIS recently started and then aborted was a system that was designed to facilitate this problem.

In view of the economic problems, what is the possibility of a completely paperless form of communication, as far as the scientific and technical journal articles are concerned? The question is, when is this going to happen? Again, I would like to refer to the Delphi study, mentioned earlier <sup>10/</sup> as well as the Delphi study that was done for DDC. In answer to the statement--"For the first time a periodical in science and technology will begin to be available in machine-readable form as well as in paper form"; the response from technologists and specialists in the area was that 18 percent felt it would happen by 1980; 49 percent by 1985; 23 percent by 1990; 6 percent by 1995; and 2 percent said it would be after the year 2000. Well, it is already happening with a journal in England. I understand that there is another one in Georgia that is starting. Most of the experts felt



that 25 percent of the journals would be in both paper form and electronic form somewhere around the 1990 or 1995 period and that 50 percent of the journals would have both paper and electronic form distribution after 1995; 90 percent felt it would happen after the year 2000; and 40 percent felt that it would never happen, which I thought was very interesting.

In answer to a comment concerning the first time a periodical in science and technology is discontinued on paper publication and is only published electronically; 7 percent said by 1980; 32 percent said by 1985; 35 percent by 1990; 14 percent by 1995; 9 percent after the year 2000; and 2 percent said never. There were also a number of experts who said that 25 percent of the journals would be completely electronic. The proportion of responses were distributed evenly from 1990 to after the year 2000, so there is not a great deal of agreement on that. No one thought that 50 percent of it would occur in the year 2000 or after; again, a number of them thought it would never happen; 49 percent felt that 90 percent of the journals would be completely electronically distributed after the year 2000. The point here is that even though several persons are saying that there is going to be a completely electronic and paperless society, I just don't think it is going to happen; and I think that our findings are very well supported by the feelings expressed by experts in the Delphi survey. The reasons are similar to those expressed earlier concerning complete electronic processing in bibliographic services or publications.

I will give my expectations concerning an electronic alternative to current paper-based publishing.<sup>11/</sup> Not all publications or articles lend themselves to an electronic alternative because of economic or other factors. We feel that the strongest candidates for an electronic alternative are articles that are infrequently used but are useful for a long time. These articles tend to be found in journals with small circulation and we have sound evidence that such journals are much likely to encounter economic difficulties in the future than large journals. Thus, there may be ample financial incentive for publishers of these journals to seek an alternative to current practice.

For the most part, the technology specified in an electronic alternative already exists. Most of the technological and economic breakthroughs have occurred outside of scientific and technical communication in areas such as office word processing, telecommunication, technology in non-scientific publication and mass storage. There should be enormous advantages to future scientific and technical communication through use of electronic processes. These advantages stem from more economical and efficient distribution of information.

Electronic word processing and text editing systems have already achieved widespread use. Word processing systems involve editing typewriters that use magnetic digital storage of one form or another. There are also text editing systems that range from terminals that tie into a local computer to intelligent terminals with self-contained memory and microprocessor-based computing functions. These systems yield improvements in editorial quality of manuscripts and provide faster and much more reliable operations. However, their most direct advantage comes from the substantial reduction of secretarial labor



costs. Here the cost tradeoff is between increased investment in equipment against reduced labor. Heavy competition in this area is resulting in increased sophistication and flexibility as well as reduced costs. Options such as editing and spelling routines, special print stations, message service and, perhaps most importantly, photocompositor interfaces are available. In the long run, manuscripts will be transmitted to publishers in digital form and articles will be edited and composed by electronic processes, substantially reducing prerun publishing costs.

It has been estimated that general use of terminals will more than double from 1975 to 1980 and by 1990 most handling of business records and correspondence will be electronic. Since many organizations will obtain electronic systems to use for preparation of letters, memoranda, technical reports and so on, the capital investment for purchasing or leasing the equipment should be spread over a broad base and the cost of preparing journal article manuscripts should be lower than with traditional typewriter input. Also, it is possible that library minicomputers, terminals or other equipment could be used by authors, just as libraries now assist authors through online bibliographic search services.

Electronic processes are being used extensively by publishers for editing, redaction and composition. The possibility of direct input from authors to publishers in digital form should increase this potential even more since the cost of keyboarding can be eliminated. Optical character recognition might also be used increasingly for direct input. However, technology and costs of OCR have improved much more slowly than many anticipated. Composition is being increasingly integrated into general text-processing in computer-based systems. As originally designed, these systems were intended primarily for editing text. However, the magnetic digital record can also be stripped of operating codes and input into an electronic composer. This type of integrated system is often used by newspaper publishers.

In the future, publishers will have enormous flexibility in the form and mode of distribution of articles made from master images, that is, formatted article text. Electronic technology has progressed to the point where articles can be individually printed directly from computer output. Impact printers caused problems with this kind of output, but non-impact printing has resolved the problem of computer output speed. The ink-jet, electrophotographic and electrostatic systems all hold substantial promise for scientific and technical publishing.

On the other hand, computer master images can also be transformed into microform or video disks. However, microform has many disadvantages including too many formats, reduction ratios, and retrieval coding schemes; poor quality film images at the reader and with paper form prints; readers which are expensive, hard to use, and bulky; inadequate user environments in libraries; and difficulty in obtaining paper form prints. The new video disk technology also holds some promise for distribution and storage. It is felt that there are some weaknesses here also, since currently their images are not adequate for displaying a full normal-sized printed page on most inexpensive viewing devices. It is felt that the greatest promise for either microform or video disk



is with new libraries that wish to inexpensively build up an archival file in certain areas. The problem is that the savings in reproduction (runoff) are not great enough to overcome the large prerun costs. Thus, prices cannot be sufficiently reduced to induce libraries or scientists to purchase these forms of distribution.

One of the areas in which new technology has been directly applicable to scientific and technical communication is in library operations and services. The most prominent of these are online (and offline) bibliographic searches, automated circulation, cataloging of books and interlibrary loan processes. Technology outside of scientific and technical communication that might make the greatest impact on the Preservation function is in mass storage memories. If a National Periodicals System comes into being, one component might be digital storage of articles input directly from publishers. Thus far, the most likely such system is magnetic tape media segmented for mechanical handling. However, there are some output problems associated with queueing delays and the output costs are prohibitively high. Also, other barriers to mass electronic storage are the needs for sophisticated indexing and control and for access software.

The principal electronic processes that could be applied to end-users are output terminals and video displays of one kind or another. End-users can use these devices for full-text retrieval and teleconferences as well as for online bibliographic searches which can lead to full-text. The use and success of such electronic processes depends to a large degree on telecommunication costs.

Most telecommunication currently is by voice grade telephone lines. Moreover, value-added networks have provided a potentially low-cost telecommunication capability for all participants in scientific and technical communication. The potential is enhanced by availability of minicomputers or intelligent terminals to senders and receivers which can permit rapid transmittal that will be buffered by this electronic equipment. Also, new technology in long-line communication such as fiber optics and digital transmission and switching equipment could yield substantial decreases in cost. Communication satellites could also be used, but the capital cost of earth stations must be reduced or shared by scientific and technical information users.

The above technological advances, which were developed largely independently of scientific and technical communication, provide all the parts for a comprehensive electronic alternative to paper-based journal publishing. Such a system would provide enormous flexibility. The principal advantage of this flexibility is that individual articles can be distributed in the manner most economically advantageous to them. Highly read articles may still be distributed in paper form, while infrequently read articles can be requested and quickly received by telecommunication when they are needed. Here the trade-off is that resources formerly wasted in printing, mailing and storage are applied to better identification and retrieval of information which results in reduced cost, better quality and increased efficiency. Other benefits of electronic processing can also be derived. It is felt that better systems integration will yield more emphasis on quality of article content, that fewer articles will be repeated over and over again for



updates or for different journals and that the new systems will provide better access and retrieval to information needed in multi-disciplinary research.

In an electronic alternative, articles will be prepared by authors using sophisticated text editing systems. Article preparation may include text writing jointly through teleconferencing systems in which immediate peer review is possible, comments are made, and specific research questions can be answered. Furthermore, many of the citations used in the article will come from those found in online bibliographic searches. When citations are identified they can be immediately retrieved by telecommunication in full-text on CRT or in paper form. The digital form of the unreviewed manuscript will be directly transmitted electronically to a publisher. The publisher will, in turn, electronically transmit the manuscript to a subject editor who will read the text by CRT or printout and make electronic notes concerning editorial and content quality. The subject editor may choose an appropriate reviewer(s) using a computer program that matches the profile of potential reviewers with the topics covered in the article. Other computer-stored information will also be used to help screen reviewers such as by affiliation and relationship to the authors, status of most recent review, frequency of reviews, timeliness of response of previous reviews and quality of reviews. The reviewers will respond to editors and editors in turn to authors by telecommunication, similar to current teleconferencing processes. Publishers and editors can also use electronic processes for business purposes, address listing, and so on.

An accepted article will then be subject to redaction by text-editing terminal and the computer-based text will be output in several forms, including full text as well as in bibliographic form. The bibliographic form will be transmitted electronically and used directly by search services or input to abstracting and indexing services to be further analyzed and processed. The full text will be sent electronically to some individual scientists designated by the author or by request to scientists based on its topic, author or some other bibliographic identifier. In some instances articles will be telecommunicated through an SDI-like system. The scientists may receive the text on their own personal terminals or on their libraries' terminals. Articles will also be sent directly by telecommunication to a National Periodicals System consisting of a central archive(s) and several decentralized computer stores. The NPS will await telecommunicated requests for copies of articles and will respond with full text telecommunicated to the requestors.

The electronic processes also provide a great deal of flexibility of output which can enhance reading and assimilation of the information. For example, end-users could request alternative formats of the text that would suit their particular needs, for example for rapid scanning or in-depth reading. Rapid scanning can be facilitated by highlighting certain elements of text, narrowing column widths, widening space between lines and so on. Human factors considerations can also help in-depth reading through other alternative format structures. Electronic processes can also aid in combining mathematical formulae, data presentations and text in a way that meets alternative needs.



The comprehensive electronic alternative system is highly desirable and currently achievable. It is believed that a majority of articles will be handled by at least some electronic processes throughout the Origination, Recording, Preservation, End-use and Transmission functions, but that not all articles will be incorporated into a comprehensive electronic alternative system like that described above. Some articles will be processed electronically in different ways depending on the electronic capabilities of the senders and receivers involved. The various departures from a comprehensive electronic alternative are discussed thoroughly in the three scenario sections that follow.

There are some major constraints in adoption and use of an electronic alternative. One of the principal constraints to alternative communication systems is the lack of incentive to change on the part of the communication participants. For example, authors are said to publish partially for prestige and recognition which results in professional advancement. Certainly, the "publish or perish" environment that exists in some fields of science and in some organizations creates incentive to publish and therefore, any alternative communication system must meet this perceived need. Many publishers lack a financial incentive for drastically deviating from the current journal publishing practices. While many book and small journal publishers appear to have financial problems, most large publishers are doing quite well financially. They make a comfortable margin on income or profits and they require much less capital to publish journals than books since the income from subscriptions is received before most costs are incurred. Therefore, the return on investment for journal publishing is favorable since capital requirements are low and net profit relatively high. Substitution of royalty payments in lieu of subscriptions is going to lessen this advantage some since photocopying takes place on many older publications, and, therefore, the royalty income for these publications will drag out over time. Thus, any new publishing systems must incorporate some financial incentives or publishers are unlikely to want to change. Another problem is that some income is derived by publishers through sale of advertisements. Distribution of separates appears to obviate use of advertising. However, Whitby 12/ has suggested that advertising can be focussed on specific scientists by advertising interest profiles and can then be distributed as separates. This may be much better than current advertising practices.

Scientists as users also present some barriers to new systems that directly impact their behavior. It has been claimed for many years that scientists would quickly adapt to the direct use of computer terminals and would search bibliographic data bases online. However, while some scientists do this, most still rely on an intermediary to perform their searches for them. This is partially because many scientists are without easy access to terminals and partially because some are reluctant to use terminals. Regardless of the reasons, if an alternative journal publishing and distribution system involves direct online communication, some incentives must be provided to scientists and their behavior must be altered. It is believed that, in the future, new scientists who have been trained on terminals in high schools and universities will find it unacceptable to not have these facilities available for analysis, text processing, search and retrieval and other forms of communication.



Libraries have little incentive to change their mode of operating unless their patrons and funders find such change desirable. While many libraries currently are becoming automated for cataloging and internal recordkeeping, they still require motivation to change their procedures in dealing with scientists. Thus, some outside incentive will probably be necessary.

Other constraints are technological. Standards must be set for word processing and text-editing output so that publishers can receive it and easily convert it to the appropriate format. One major problem deals with treating nontextual input, including graphics in forms such as tables, line graphs, photographs, mathematical formulae and chemical compounds. Technologically, graphics can be electronically handled now, but the economics are not practical for the considerable amount of graphics found in articles published in the fields of physical sciences, engineering and life sciences. Another requirement is that the cost of telecommunication must continue its downward trend in the future. Unfortunately, there is some indication that future <sup>13</sup>Federal Communication Commission rulings could damage this prospect. Sending and receiving equipment must be sufficiently sophisticated to permit rapid communication in order to reduce costs. Mass storage devices now available could economically store nearly all current literature, but cost of input and output may be unacceptable unless some breakthroughs in this area are made.

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Annex I: Communication Functions in Science and Technology.  
Annex II: The Current Practices.  
Annex III: An Electronic Alternative.  
Annex IV: The Cost Model.  
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## A SKEPTIC'S GUIDE TO THE PAPERLESS SOCIETY

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The typical scenario of the paperless society is simplistic. There are many factors which will slow the diffusion rate of the new technologies including economics, copyright, government regulations, and attitudes. Even if all new acquisitions by a library were in paperless form beginning at once, half of a library's collections would still be in paper formats 20 years from now.

The composition of library collections and services will become more diverse. Librarians will need to become what Joe Wyatt of Harvard has called "multiliterate."

Computing and communications are beginning to blend into communication; video-disk and microforms are becoming part of integrated technological systems. Librarians can't and should become expert in all of these technologies, but they should be skilled in the following:

1. An overview of the functional aspects of technology
2. The development of data bases
3. Terminal utilization

The best preparation for the 1990s is to understand the objectives of libraries very well and to be able to articulate them clearly to those who specialize in technology.

I do not know if at this conference you have had a scenario of the library of the future or the society of the future, which has created the scene of a totally paperless environment. In a way, I hope you have because it is against that scenario that I wish to speak. I think it is a very simplistic assessment of the future to say that our environments will be paperless. I think instead that they are going to be much more complicated than that because we will have environments that are a mix of all that we have experienced in the past, plus an overlay of new technologies. We are not going to wipe out the collections of printed materials and libraries because even if everything one added to one's library collection, starting right now, were to be in paperless form, it would take at least 20 years for half of the collection in the library to be paperless.

There are all sorts of other constraints which affect how rapidly a society will shift to a new technology. Among them are the economics of vendors being able to produce the information in paperless form and the restraints in terms of those who own the copyright refusing to have their information reformatted. There is the restraint of federal regulation that may preclude certain technologies or may put limitations on those technologies. There are the attitudes of people,



whether they be the attitudes of librarians, or library users, or the attitudes of manufacturers or suppliers of services, that make them decide not to do something. The diffusion rate of a technology is one of the least studied aspects of our society and that lack of research makes it very difficult to reliably forecast the future.

Two years ago I was involved in a task force with the National Science Foundation. NSF was attempting to get guidance in planning future programs in information science and technology. The task force told the NSF that you have done a lot of funding of technology; what you have never funded and what you should fund is what can be done to utilize all that technology effectively. It has taken from 1934, when microfiche was in fairly common use in France, to the late 1960s for microfiche to become fairly well established in the United States. Technologically it did not get that much better in those years. What was the key? The key was COSATI, a federal organization, mandating that microforms produced under federal contract had to conform to certain specifications. That particular group had a bias toward 4 x 6 microfiche produced to certain standards and influenced the whole market because a large number of contractors depended heavily on federal government contracts. They had to make the capital investments in that microfiche technology. As a result they abandoned, in many cases, the other technologies they had been offering, such as, micro-opaque, the 3 x 5 fiche, and the 35 mm film in order to concentrate on a single format and, of course, that single format was dictated by the source of the largest flow of cash. There are all sorts of factors that affect the diffusion rate and we don't know what all of them are. I am not going to try to explore this field except to say that what is probably going to happen between now and 1990 is a much greater diversity of technologies augmenting those which we already have. What we will have to do is become, as Joe Wyatt, the Administrative Vice President of Howard University, said, multi-literate. In other words, we have to become competent, not only in terms of the printed word, but in the various technologies that will augment the printed word.

In the same way that we are now literate in terms of the printed word and know how to use it, we should think in terms of the functional capabilities, limitations, and uses of new technologies. We should emphasize function rather than worrying about knowing why they function as they do. It is not necessary to know what is inside that box known as a central processing unit of a computer or what is inside that microform camera. I submit that there is no way that librarians can or should become expert at all of the different technologies; rather they should have knowledge about how these can assist in the library environment. They should be able to articulate the needs of their organizations in terms of functional specifications and be able to evaluate alternatives in terms of their meeting those specifications. This is more the key to dealing with the future than going out and trying to familiarize yourselves with a large number of technologies.

I keep stressing a large number of technologies because the task is now one of choosing a technology to meet the needs in your library, as against continuing your present manual library procedures. If one



decides that one's acquisitions methods are not satisfactory and wishes to introduce a new technologically-based acquisitions system, one has the following options. One can go to a bibliographic utility such as OCLC, UTLAS in Canada, Washington Library Network in the Research Library Information Network, and say, "I am interested in the acquisition subsystem that you have or are developing." Each one of these utilities either has, or will in the very near future be operating an acquisition subsystem through a terminal in the library linked by telephone lines to that bibliographic utility. The terminal can be used to display information during the pre-order searching and can be used to place orders on-line to a vendor or to generate purchase orders from the data that is in the data base. It can keep track of these orders, do funds accounting and various other applications. Later as the materials are acquired, it can move the bibliographic information down the pipeline into cataloging and, subsequently into a circulation subsystem. There has always been a cardinal principle of sound planning; to enter the information only once and not re-enter it. The utilities are on the verge of achieving this principle.

This is not the only option. One can go to a turnkey vendor of a system, of which there are eight serving libraries in the United States and Canada. These companies buy a small mini-computer, develop the software package, handle installation, post installation servicing, staff training, etc. In other words, it is a turn key system; I turn the key and it is there ready to operate. One does not need in-house expertise to design the system. These turn key vendors started in 1971, developing circulation systems at a time when the mini-computers had a fairly limited capacity. Since that time, the capacity of mini-computers has expanded tremendously and, yet, the cost of mini-computers has come down. Now these companies are beginning to design other packages; acquisitions is the first and it is already well developed. The mini-computer in the library can thus take order information and use it to produce not only purchase orders, but also keep track of outstanding orders and trigger the necessary claiming, do the funds accounting and perform the other functions.

These are still not all of the options available. One can go to an organization in Nashville, TN, called Ingram Book and can arrange to get from them regular shipments of stock reports on microfiche, which they have produced using their computer. These can be placed on the fiche reader in the library and it will show what they have in stock, the quantity and stock number. One can then order these with a collect telephone call. The fiche is constantly updated and it gives not only bibliographic information, but it tells you the current condition of the vendor's stock. We all know how frustrating it is to back order something and find that, although one might save a few percent or one might have some extra convenience by going to a wholesaler instead of a number of different publishers, back ordering may take several months and one may be doing a great disservice to the future users of that material.

Yet another option for acquisitions is to go to Baker and Taylor or to Brodart and arrange an on-line terminal to their computer. One can use that computer to determine what they have in stock and can use it to place on-line orders. In the case of Baker and Taylor, one can get



a related accounting package that one may mount on a computer to which one has access in one's own organization. If they do not have a title in stock, one can place an on-line back order, but one knows that it is a back order because one can see the stock display on the screen. One can also use it to create a purchase order which can be sent to another vendor.

One has still another option; one can go to the RR Bowker Co., a subsidiary of Xerox and the publisher of Books in Print. They have a market probe going on right now. They are still testing the waters and they have not made a firm decision yet, but they are placing computer terminals, not only in libraries and book stores which are interested in ordering, but also in publishing houses so that they can enter forthcoming books into the system. In effect, one has Forthcoming Books in Print on-line and can search the system for recent information on what publishers are putting out and can actually place prepublication orders. The Bowker system is unique in that it is multi-vendor; one can on-line, not order just from the supplier of the system, but from anyone who is linked into the system. Any publisher or any wholesaler can be used as a source.

There is yet another possibility. One can go to an organization which provides on-line bibliographic information only, such as SDC, Lockheed or BRS. There are negotiations going on right now among some large publishers, wholesalers and these vendors of remote data bases to make it possible to access bibliographic files on BRS, SDC or Lockheed and use the linkage of everyone who is on that system to send a message to the vendor.

There are more options. My whole point for going through this scenario is to suggest that the future is not one of choosing between where you are and a new technology. Instead it is a whole range of complex options from among which one needs to make a choice. The choice may be to keep that which one has or to redo that which one has. There are going to be many pressures, in terms of people above you saying, why do you modernize, why do you use a new technology or from your users saying, why don't you get with it or from sales people, one is going to have to make a choice. One can make it on the basis of superficial investigation or very systematically, based on a great deal of investigation. In either case, one is going to have to make a choice because all of these options are there and are being pressed forward.

The question is what kind of skill does one need to make this type of choice. One of the unfortunate things is that some librarians have thought it necessary to take courses in programming. They wind up learning a lot of things because librarians, as a profession, are among the brightest intellectually, of any segment of the population; but they do not get anything very useable out of it. What is really necessary, in the library community, is developing expertise in analyzing a whole range of options for functional capabilities. One can then say I have these requirements and these options appear to meet the requirements and these do not. One should be able to identify a limited number of options which appear best to meet the functional requirements and, then, seek out the necessary experts in those



specific technologies. If one decides to investigate the video disc technology, which is an emerging technology, find out about the state of that particular technology in terms of its utility for libraries. If the decision is that video disc technology is not suitable functionally then do not pursue that area. Use the knowledge of librarianship to assess the functional capabilities to narrow the choice, and then draw on expertise to explore the specific choices in terms of technical details.

One of the things I want to stress is that the technology which is best for a library is not necessarily the technology which is, technologically, most sophisticated.

One of the other things one has to consider is what technologies are likely to survive. The fact that something is technologically very good does not insure its survival. If there are a half dozen or more different ways that one will be able to handle acquisitions in the future, not all are going to be equally successful in the marketplace. It won't necessarily be the one which is technologically superior that will last; it may be the one which is most effectively marketed; it may be the one that has the most money behind it; it may be the one that strikes the imagination.

One of the things I said to another group was, I suspect that View Data or Prestel will be a very commonplace technology in the future because it is built upon two existing technologies that are omnipresent in our society, the telephone and the TV set. With a single adapter on the TV and a touch pad, one can use the TV set as a source of accessing the machine-stored data bases on a remote computer. If the right marketing effort is behind that technology, something which is already in every single home in this country is going to have a much better chance of making it than a new technology which requires someone to go out and buy \$1,000 or more of specialized equipment for that particular information retrieval system. The assessment one makes, therefore, has to be more than just an assessment of the functions. One has to determine what is the likelihood that this is going to survive? One does this by trying to read signs. For instance, there was a little blurb in the New York Times that General Motors has just placed two video-disc contracts. One is with Philips North American for 7,000 optical video disc playing devices and the other for 13 million dollars with MCA to produce the discs. These disc systems will be demonstrated, showing GM automobiles' capabilities and construction features. They will be used in show rooms all over the country. They will also be used as training devices for sales people. When an investment is made by a company like GM, which substantially consumes the production capacity of two large suppliers for several months, it is a signal that this technology has a very, very high probability of success. These kinds of clues do not require a great deal of technical expertise on the part of an individual to say that something looks promising.

The other area of expertise which is necessary for librarians, besides this kind of over view of functional capacities and limitations, is the ability to clearly and succinctly articulate one's requirements. We really do not very often sit down and, in a series of precise



phrases, spell out what it is that must be accomplished. I am thinking in terms of a specification that is functional again rather than a nuts-and-bolts specification. During the 1960s, I did considerable consulting on library buildings, furnishings and what have you. People would come out with specifications for bookstacks requesting the uprights of the bookstacks to be eleven gauge, have at least 6 bends, the shelves to be at least 18 gauge and all sorts of other nuts-and-bolts statements telling the vendor how to do something. These shelves would then be put in, and in a few weeks, would be bent in a V-shape. Customers would complain to the vendor that it sold poor bookshelves, but the vendor would respond that it sold what was specified. The customer said 18 gauge on the shelves and that is what was supplied. Send it to a laboratory and have them test it; it is 18 gauge. No one asked the vendor to warrant that it was fit for the purpose. It did not take long for specifications to change, become functional and say that the shelving had to be able to take a load of no less than 90 pounds focused on the center of the shelves and not result in a deflection of more than 2% nor bend the brackets. These are functional specifications. These kinds of statements: saying that it has to be able to withstand this, it has to be able to do that, it may not do that, in a series of precise statements constitute a functional specification. To be able to articulate requirements for a cataloging system, an acquisitions system or a circulation system in a functional way, is what one has to become skillful at doing. Once one has narrowed down a range of technologies to those which have potential, it is necessary to communicate with the vendors of those technologies. One can say that one wants to be able to tell whether or not a particular book is in the library, to whom it is charged, when it is due back and various other things by entering in the author and title of that book. If one does not know the exact author and title, one wants to be able to put in part of an author's name or part of a title and still get a response. One must state all of this in the functional specifications. How soon does one want the answer back, whenever the machine gets time or in five seconds or seven seconds or some other time. One has to set up an acceptable standard. Machines are not perfect and one must decide what percentage of down time one is prepared to accept. The vendor can give a library two computers so that one will take over when the other one goes down. Even then, it cannot assure the library that the machine will never go down, but at least, the safety level margin increases. If one says 10% maximum downtime, they can give you one computer and an expensive one. If one says 1/2%, they will give you two computers. These are functional specifications. It is important to write those kinds of functional statements succinctly and to write them in such a way that one does not unnecessarily add to the cost. Ambiguity, in statements of requirements, adds to cost because people who bid on these specifications protect themselves against ambiguities by increasing the price. Librarians need to develop this skill for the future.

Another area of expertise librarians can develop as they move toward the greater use of technologies in the future, is the building of data bases. Actually, the building of card catalogs is the building of data bases in a particular format. It is highly likely the data bases of the future are going to be built in machine-readable form



because it makes them more flexible. It also makes them easier to share with other libraries, both in terms of costs and for information. The principles governing the building of data bases are really quite similar for card catalogs and for machine-readable data bases. Sometimes we get a little too worried about technology and forget that the real expertise is the ability to organize information and organize it effectively.

One of the things I have found by going into a commercial firm is that the philosophy and skills of library cataloging, with the library jargon removed, carried into a commercial environment where there is an information handling problem, are the most sophisticated and the most impressive that our clients have ever encountered. One can, literally, to use the jargon, blow their minds with principles of library cataloging applied to an information handling problem in a for-profit organization. They have all sorts of skills in-house, including a librarian, they never thought of using that person's skills to apply to a problem outside the library. One reason is that the librarian has not thought of the transferability of his/her skills either. The skill of creating data bases and organizing information is transferable to many different environments. It is also transferable from card catalogs to machine-stored systems of various kinds.

Another area in which librarians might build their expertise is with regard to the terminals to the new technologies. I said earlier that I did not think it was practical, or even desirable, for librarians to become knowledgeable about what makes everyone of these technologies go, but should be more concerned with their functional capabilities and their functional limitations. I have a slightly different view of terminals because to most people, the terminal is the technology. The ease with which it can be used determines, to a large extent, the attitude toward the technology. One of the things that is happening in libraries is that the critical point of contact with the user has been neglected and is being left up to the vendors. Let me give you a couple of illustrations. I went into a major academic library in the northeast which had used computer printouts in its old computer system. The printouts showed books that were charged out and when they were due back. If someone could not find a book he/she could go to one of the computer printouts and leaf through and determine that the item was checked out and due back on the 30th of the month. He/she could then go to the circulation desk and have a hold put on it, or say forget it, or whatever. The library contracted for one of the new turn key on-line circulation systems which did not provide for any printout capability. The library decided that was a service their users had become accustomed to and told the company they were not going to buy the system unless it had something it could give the patrons as a substitute for the printouts they had used under the old so-called "obsolete system." The company said that printouts are a terrible way to give information to people and suggested using public terminals. So what happened? One goes out to one of the terminals and it lists the following instructions: Enter a backward slash, enter in each element of the call number, separating the call number by the elements of the number with a slash, escape the system by entering a dollar sign. I submit to you that even an accomplished typist would have a hard time figuring out where on the typewriter keyboard or on



the CRT keyboard, the backward slash is located. Unless one is knowledgeable about the particular library one is going to have a hard time taking that call number copied from the card catalog all in one string of numbers and separating it into the various elements of the call numbers divided by slashes. It may also take one a moment to figure out what escaping the systems means. This is not what Charles Goldstein, who spoke to you earlier, would call a "user-cordial system." It is a combination of poor software design, that is, poor instructions to the computer, and poor sensitivity to terminal users' needs.

Let me contrast that for you, using a bank in New York which has a fairly high turnover. They were spending a lot of time and money training people in using computer terminals so they brought in consultants to redesign the terminal. The company who supplied the terminals, however, stated that if the terminal was redesigned the warranty would no longer be good. The bank asked the consultants if there were any way to redesign the terminal and keep the warranty in effect. There are 3,700 of these terminals; and if the warranty is no good and the vendor won't do the maintenance on them, it would mean setting up a whole service department. What seems to be the problem? Don't these people know the keyboard yet? Most of them are good typists, but there are these various functions, such as, when you want to call up about a person's bank balance, you have to put in a "B" and then a semicolon. The semicolon is a message to the computer to perform a certain function. The consultants asked if it is important that it be a semicolon. Of course, the computer does not know that it is a semicolon written on the key. The consultants suggested making it a bright blue key and one simply says hit a B and the blue key. The only necessary change is to replace the existing key with a blue one. The escape key could be replaced with a bright red one. The next time the serviceman came in he reacted a little strongly to a yellow key, a green key, a blue key and a red key; however, the brand new clerks were just punching away after a couple of hours, hitting the colored keys. They might not know all the special keys on a keyboard to a computer terminal, but they could, unless they were color blind, very quickly find the red key and the blue key for specific functions. The inside of the terminal was not modified at all so the warranty and service agreements were still good. What I am trying to suggest is that there is a great deal that can be done with very little money and without redesigning the insides of terminals to make them more "user-cordial." Not enough attention has been paid to that aspect of it. Since the terminal is the computer or other technology to the users, one of the areas where librarians should become concerned is the nature of that terminal. They need to insure that the access to whatever system is chosen, deals with the users in terms to which they are accustomed.

One of the best examples of "user-cordiality" is the terminals at the University of Guelph outside of Toronto. There are a number of public terminals, and the computer says, how are you? Which of the following would you like to do: A. Ask about a book by author, B. Ask about a book by subject, C. Ask about a book by title, D. Ask about a book by call number, or E. Ask about your own record. One presses the correct key and makes a choice. It then says please enter in the



name or word as close to the spelling as is known. It walks one through a series of choices which are so simple that no one is put off by it or offended by a strange system. The people at a nearby university also got one of the systems, but shortly thereafter, they discovered the staff was going crazy with it because every time they wanted to do something, the computer insisted on walking them through all of the steps. The staff already knew which step was needed and they wanted to get past that step to something else. They needed a command system so they could tell that computer what to do rather than have it lead them gently by the hand. They had the software redesigned that way, but then it was bad for the patrons. A system with a choice built in would give one the choice to override all the prompts and run the system. Fortunately, they were working with a computer company that was attuned to that and was able to make this change. Now the system is a mix where one can choose the mode of operation. The person who worked with that computer company, was not an expert in computers, although the library has two systems analysts on the staff who are both trained librarians and computer scientists, but this was not the kind of expertise that it really took. The expertise which was needed was knowing how people behave when they are trying to get information out of a library system.

One of the most important things that librarians can do in order to develop that kind of catalog of skills for themselves is to consider looking beyond their own limited groups. One of the unfortunate tendencies, even if one goes to a general convention like the American Library Association, is to spend one's time talking to one's peer group. A large convention like that is a whole series of peer groups. Most librarians talk to others of their own peer group wherever the site happens to be. I told an anecdote, at an earlier session, about the time I was hired as an expensive consultant from the east coast to go to the west coast to tell an academic library how to solve a particular problem. I posed some options and one of the options was quickly selected. They were so excited about it, they wanted to see it in action. I told them to go two buildings down and turn left to the medical library. The general librarians never had contact with the medical librarians, or vice versa, so they needed a consultant as an information transfer agent. Frankly, most of what consultants do is carry information back and forth from one environment to another, and they get paid for it. Librarians who break out of their boxes of their own peer groups and talk to other people who have information problems, such as, publishers, booksellers, etc., are the ones who will develop an overview of the applicable technologies. They are going to be in a much better position to make the critical choices. We chose to be librarians because we were convinced of the importance of libraries; nevertheless, we should admit that published information has the disadvantage of time lag. Technological development in our society has begun to move at such a rate that no published sources of information are very good. I can remember being terribly frustrated last year when 6 months after doing the research on the various circulation systems that were available to librarians, my report was finally published. There had been dramatic changes in the turn key circulation system field. My own reaction to that report was that it was out of date and useless. There are fields which have such fast rates of development, one has to build one's own invisible college as



a way of keeping abreast. Information technology and library technology are fields in which a good peer network or invisible college, which goes beyond one's own particular kind of librarianship, is the best device for keeping current. Frankly, I think it is a lot more fun having lunch with a person who is in a completely different field and sharing some of the problems of information storage, retrieval and dissemination, than talking to someone who is so much like one that one might as well talk to oneself. I would urge all of you to broaden your range of contacts and put consultants out of business. Then I could pursue my next career interest.

## SUMMARY OF ACTIVITIES OF TASK GROUP 1

Joe Medeiros  
Air Force Systems Command

The recently revised Bureau of the Budget Circular A-76, Policies for Acquiring Commercial or Industrial Products and Services Needed by the Government, has caught the attention of the entire DoD library community.

Eleanor Driscoll, Chairperson for the Task Group, emphasized that the purpose of the sessions was not to debate the pros and cons of contracting-out, but to review and discuss the status of contracting-out DoD libraries, to learn from the experiences of those now involved in contracting, and to be better prepared should we be called upon to prepare the documents for, or to participate in the studies and reviews of, contracting-out our libraries.

Included in the extensive collection of library contracting documents which were distributed to all participants of the task group were the A-76 Circular and its supplement - The Cost Comparison Handbook, guides to the preparation of statements of work and contract monitoring checklists as well as several samples of each.

Captain Fred Marcotte recapped for the group where DoD stands today insofar as existing total facility library contracts in the DoD is concerned. His detailed review of these contracts revealed several problems and weaknesses which might be resolved if librarians could develop comprehensive Statements of Work (SOW) describing what contractors are expected and required to do. He emphasized that since Procurement people actually write the contracts, it is these same people who must be made aware of library requirements. Later, the task group discussed those elements they felt to be important enough to include in an SOW.

Each of the Service's Library Directors was asked to review the library contracting situation in their organizations. In addition, Miss Driscoll briefed the group on Air Force Systems Command's contractor-operated libraries and fielded various questions on her experiences with these libraries. She emphasized the importance of incorporating into library directives as much as possible guidelines and stipulations for library operations and procedures. Reference to these directives, she added, will prove helpful when developing a comprehensive Statement of Work for contractor-operated libraries.

The highlight of the Task Group on Contracting was the briefing given by Mr. William Russell, the Office of Management and Budget OPR for A-76. Mr. Russell traced the history of A-76, beginning in 1966 and discussed the contents of the newly revised Circular and its applicability to libraries. He outlined procedures of the A-76 process including the appeal process. Mr. Russell stressed the importance of a comprehensive SOW and stated that if the guidelines in the Cost Comparison Handbook were followed, the results would be a sound cost comparison analysis that could be defended. He cited one instance where an A-76 review in a DoD organization resulted in reduced



manpower and savings that proved in-house operation to be more efficient. He credited such results to the discipline of the procurement process. Mr. Russell fielded over 30 questions from the group. The subjects covered included: the effects of contracting-out on civil service personnel, essentials of the Statement of Work, quality of contractor personnel, continuity of service between contracts, union involvement, non-appropriated fund applicability, upcoming new procurement directives, and many other questions of concern to the group.

During the last day, the contracting group reviewed the work of the previous sessions and agreed upon the following recommendations:

1. Report to the entire Military Librarians Workshop that Headquarters Air Force Systems Command, Director of Command Libraries (DPSL), Andrews AFB, Washington, D.C. 20334, will keep a master file of contracts and all documents pertaining to contracts, available as needed to any interested party. Announcements and procedures for requesting documents from AFSC will be published in each Service newsletter.

2. Recommend to the Program Committee that Contracting as a Task Group be continued for as long as needed.

3. Recommend that each Service form a committee to develop a model Statement of Work (SOW) and a model Task Monitor Checklist; further that the chairperson of each Service's committee coordinate with each other and meet as necessary, but at least meet at a pre-conference meeting before the next Military Librarians Workshop; further that these chairpersons be part of the recommended Task Group on Contracting Out Library Services at the next Military Librarians Workshop.

Members of the task group recognized that contracting is upon us, probably here to stay, and at the end of the conference most felt that contracting is definitely something to be contended with in military libraries in the 1990s.

## TASK GROUP 2 SUMMARY

James P. McConnel  
Naval Research Laboratory

### General Session

In summarizing the activities of the Task Group on Closing the Card Catalog, I would like to begin by thanking Christine Eynon for her fine work in selecting our group speakers and making the arrangements which permitted them to attend. Group response to the program was enthusiastic and reflected the high level of effort she invested in planning our session.

It was apparent from our first session that everyone in our group agreed the card catalog should be closed. In support of this, Dr. Robert Wiederkehr, King Research Corporation, presented a model which allows librarians to cost out closing the card catalog using different variables. Librarians can choose different models of catalogs (e.g. COM and Card) based on such things as size and content of the collection, growth and the staff available. Closing the card catalog, however, does not mean doing away with it. The card catalog is recognized as having a useful function and being a valuable resource. Once this premise is accepted, it becomes a matter of selecting the best technique for utilizing the information in the catalog. Form and format of the new catalog are important considerations. Will the catalog be in microform with card information in MARC format? How often will this information change? Annually? Weekly? Daily? New forms like KWICs (Key Word In Context) and KWOCs (Key Word Out of Context) allows new forms of access. For some libraries there is also the possibility of automating access to card catalog information, of going on-line. If you are adventuresome you may wish to consider going to on-line access to project your catalog outside of the library walls.

In costing out these systems the client often has to become conversant in the language of the computer "experts" who provide the structure to meet library requirements. Often these so-called experts don't have a good grasp of library-type problems. Such changes in operations require justification to overhead management. Libraries can cite improved service, long-range savings or meeting the special needs of their clientele as a legitimate basis for these changes.

On-line catalogs have certain editorial considerations. Very important is authority control which allows the catalog to be upgraded without incurring tremendous costs. You also have to decide if what you have is worth converting. Is the bibliographic record substantial enough and is it accurate? There are other questions which need to be asked: What other products can the new catalog provide? Can it be used by other branches of the library staff (e.g., acquisitions)? Can it be used for reference or duplicate checking? Finally, you have to be able to protect the integrity of your files from unauthorized access. After the catalog is on-line, the library can go outside its walls to find new users. Terminals can be located at work stations, in the home,



etc. They allow rapid computer access in real time to the store of knowledge in the library supported by delivery of goods and services.

In summary, I would like to emphasize the following points:

- (1) The card catalog will be assuming new forms;
- (2) The information presently residing in the card catalog serves a purpose in locating other information and therefore has value;
- (3) Changing the card catalog requires a thorough analysis of the reasons for change, as well as, the techniques to create it;
- (4) A rigorous analysis will provide answers to ingress and egress from the catalog file to make it more attractive to users;
- (5) New products and services will be identified from the file, for example the use of an on-line catalog to help in the acquisitions process;
- (6) Costs for creating this change will have to be considered along with a good hard look at the value of what must be converted;
- (7) and finally, the library is in a position where it may begin to think about projecting its services outside the physical walls of its environment.

## SUMMARY OF ACTIVITIES OF TASK GROUP 4

Sarah A. Mikel  
Army Corps of Engineers

The Task Group was presented with an opportunity to explore the topic of management from a future perspective. However, speakers did not discuss only management in terms of future technologies as might have been expected. Rather, traditional management concepts and the role of new technologies were discussed equally. The topics included the revision of Title 44 and its impact on the management of government documents, the use of public relations as a management tool, information versus technology tradeoffs, training for the future library manager and the management of military library programs.

Participants in the Task Group represented different work experiences and this was reflected in their discussions of the management topic. Speakers included Bernadine Hoduski, Joint Committee on Printing, Diana Proeschell, Office of the Adjutant General, U.S. Army; Paul Ryan, Ballistics Research Lab, Aberdeen Proving Ground; Frances Quinn, Eglin AFB; Barbara Collier and Cynthia Yoder, Department of Army, Corps of Engineers. To choose one theme to summarize the discussions of this group, it would be that all speakers recognized the need for effective library management to prepare both the librarians and their libraries to play an important role in the information world of the 1990's.



## SUMMARY REPORT OF TASK GROUP 6

Ms. Bonnie Davis  
Naval Explosive Ordnance Disposal

This task group had the opportunity to listen, and talk to various people who are well known in the fields of automation, information and library science. We had the chance to present some problems peculiar to our specific areas and receive some advice on what we might try to resolve them.

Not only did we gain knowledge of past automation attempts, present and future possibilities, we also gained some advice on how these people stay on top of this information explosion. They also find it impossible to read everything they need to, so they read what they can to get a general idea, but rely on talking with their fellow colleagues for the rest. They are constantly questioning everyone they meet on what they are doing and what problems they are having. While we all do this to some extent, I do not believe any of us do it as much as we need to. Richard Boss, one of our speakers, said he considered one of the most important reasons for attending a meeting of this nature was to "pick his fellow colleagues' brains." He found he always gained twice as much in that fashion than through the "normal" channels of literature.

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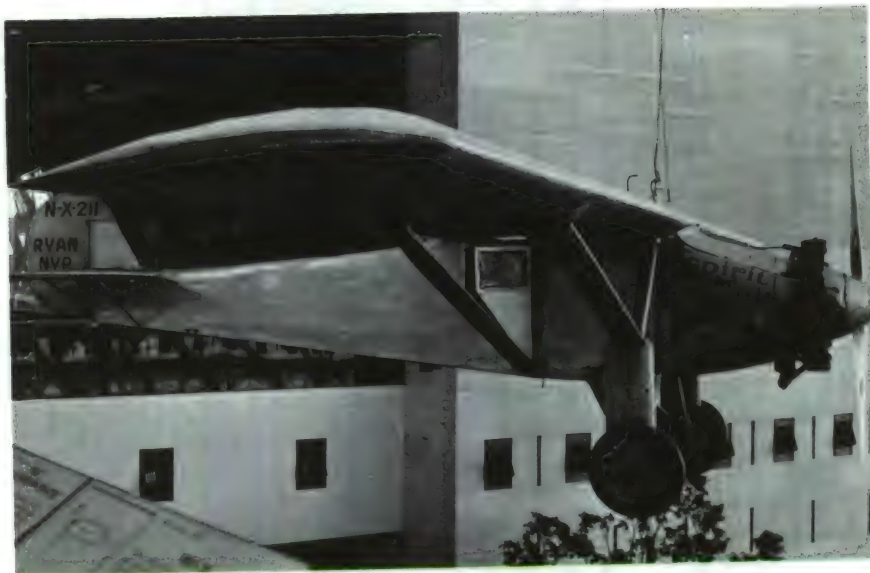
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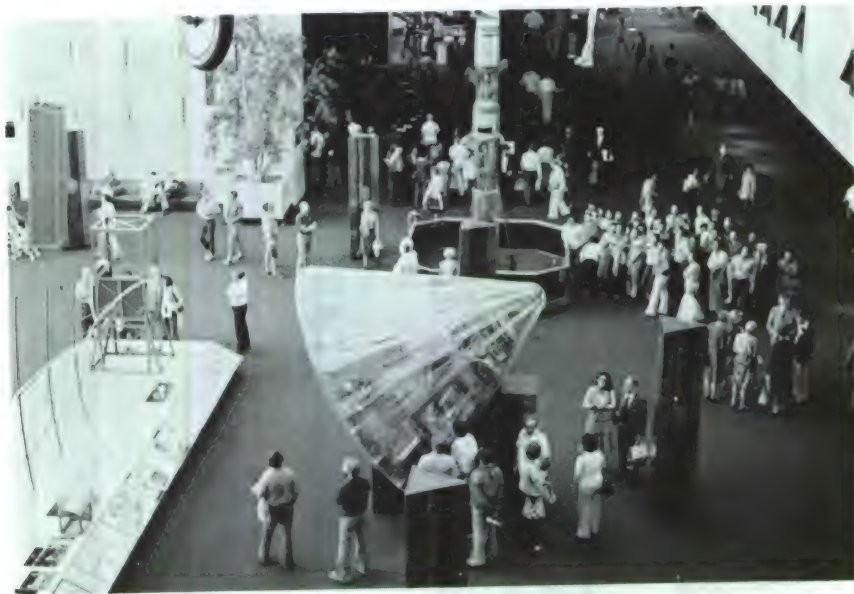
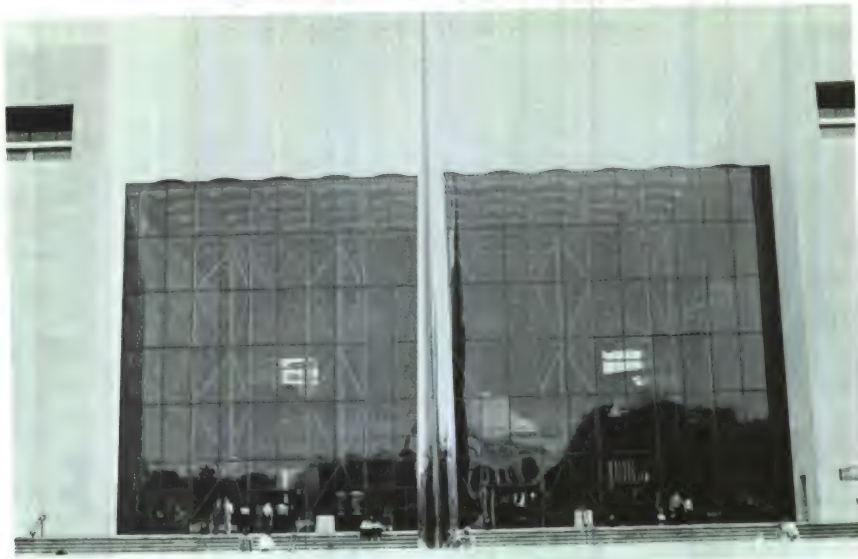


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